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CONTENTS

Requeen? — Definitely! but When in Fall Flow Areas?	Aylmer J. Jones	329 - 330
Kinds of Bees	George E. Bohart and William P. Nye	331 - 333
Transferring Bees—the Driving Method	R. L. Parker	334 - 335
Produce Comb Honey the Easy Way	M. J. Deyell	336 - 338
Managing Editor to Assume New Post		338
Overstocking—An American Viewpoint	Robert M. Mead	339 - 340
Revision of U. S. Standards for Grades of Comb Honey Proposed...		341
Sulfathiazole and Terramycin for AFB	Edwin J. Anderson	342 - 343
American Honey Institute News Notes	Harriett M. Grace	343
Efficiency in Operating a Small Apiary	Charles Gouget	344 - 347
Newsreel		348 - 349
How Storage Affects Honey	Vern G. Milum	350 - 352
Bee Facts	Walter Barth	353
When to Give Bees More Room	E. C. Martin	354 - 355
Editorials		356 - 357
From Foreign Lands	Erika Barth	358
Live and Learn	Propolis Pete	359
Beekeeping in Rhode Island	Howard A. Pike	360
Queen Introduction	Milton Stricker	361 - 362
Honey Desserts	Mrs. Benj. Nielsen	363
Let's Talk about Honey Plants	Harvey B. Lovell	364
Eastern Apiculture Society Annual Meeting		365
A Talk to Beekeepers	M. J. Deyell	366 - 368
Just News		369 - 370
Bee Lore		370
Our Cover Picture		370
It's All in the Queen	Julius Lysne	380

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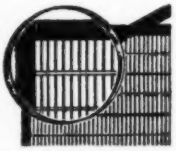

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BECAUSE of the press of other duties Walter T. Kelley, Clarkson, Kentucky, has decided to discontinue the publication of **"Modern Beekeeping"** and has contracted with GLEANINGS IN BEE CULTURE to fill out the unexpired subscriptions. In the case of those who are already subscribers to "Gleanings", their subscription is extended by the number of months still remaining on **"Modern Beekeeping".**

The Editors of "Gleanings" are sincerely sorry to learn of the discontinuation of MODERN BEEKEEPING. While in a sense all bee journals are in competition yet the more journals there are, the greater is the coverage of the industry and the interest in keeping bees. So it is with regret that we learn of the passing of this fine magazine. We do welcome the new readers, however, and hope that they may receive the same satisfaction from each issue of "Gleanings", that they did from **Modern Beekeeping.**

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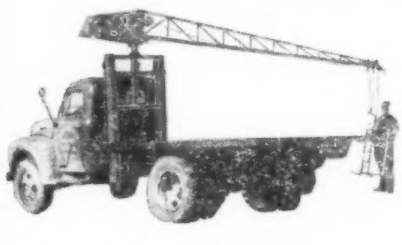

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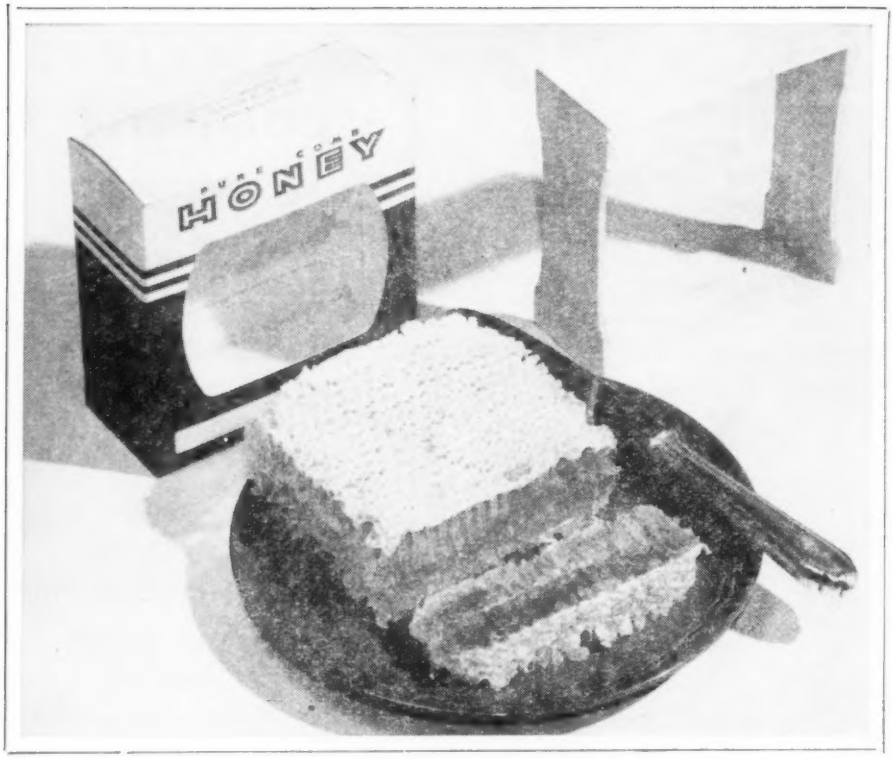

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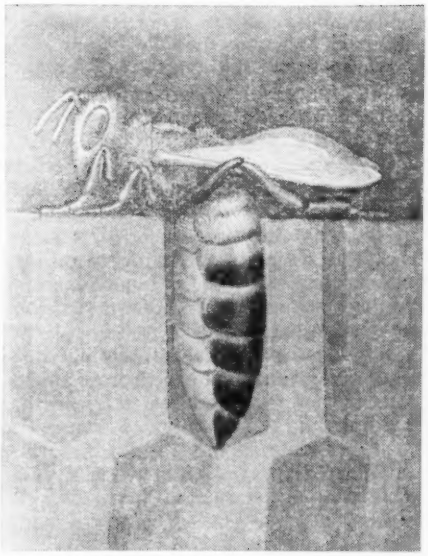
Requeen? ... Definitely!

but when, in fall flow areas?

by AYLMER J. JONES



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THERE IS great unanimity of opinion even among experts (which is a remarkable thing in itself), that colonies of bees should be requeened periodically. Perhaps because of this agreement of opinion and consequent lack of argument about pros and cons of the general principle of requeening, and because of great discussions that rage on other aspects of beekeeping, the novice may not give proper weight to its importance.

For instance, in any gathering of beekeepers, talk eventually swings around to swarming problems, and argument arises as to proper control. Certainly swarming is a serious problem. Dr. Miller is reported to have said in essence, "If I could be omniscient as to just one problem in beekeeping I would want to know what one thing it is that finally makes the bees swarm".

Or consider a discussion of foulbrood. After listening to any two or more rabid beekeepers argue about burning vs. sulfathiazole, there can be no doubt in even the rankest neophyte's mind that treatment of some sort is very important indeed. In fact, once he has had a colony swarm, he needs no urging to take swarm control measures of a sort, and once he has had a colony come down with foulbrood, he needs no one to tell him this disease calls for immediate remedial as well as preventive action.

There is something positively dynamic about witnessing a colony swarming, and something negatively dynamic about inspecting a colony that is lost to foulbrood. The results of either jump at the observer, or to be more correct make the observer jump.

On the other hand, when we come to requeening — yes, well, everyone does say to do it, but no one gets hot under the collar about it. It can't be so awful important, can it? If you do not requeen, after all, the bees will do so sooner or later anyway. Queens cost money, queens are a nuisance to raise, you can't count on drones, etc., etc. The point is, in all this, that the **single most important** operation in beekeeping, requeening, is usually neglected by the average beekeeper—excluding commercial men as the latter would not long remain efficient if they neglected it—and the sad thing in requeening is one of the very best swarm and disease control measures in itself.

Brother Adam of Buckfast Abbey in England—certainly one of the world's

outstanding contemporary students of beekeeping and a successful practical beekeeper too,—has repeatedly pointed out the value of a better queen. Frequently his current whereabouts are described as "on the Continent still searching for a better bee." In a pamphlet widely circulated in England, dealing with solutions to foulbrood and other problems, Brother Adam ends a long discussion by saying in effect "Such discussions, however, are academic. The real solution lies in a better bee. Introduction of a queen from a strain highly resistant to disease goes a long way toward solving that problem as well as many other problems, simultaneously".

In almost every field of animal husbandry we read about increased production per animal due to selective breeding and **elimination of the unfit.** Cows are yielding more milk, butterfat, and meat than ever before—partly due to improved feeds and methods, but mostly due to breed improvement. Hens are the same.

We all know the story of the Beltsville turkey. The bee culture boys at Beltsville have done and are going the same for the honeybee—and this is a story in itself. Are you taking advantage of this development work by requeening with the best, or are you just sitting on your big fat chair and saying "yes, requeening is a good thing—for the other fellow. I don't need to". After pondering on the foregoing thoughts for awhile, let us turn to the mechanics of this all-important operation and its results.

The question of where to get queens, how to raise them, how to introduce, clipping and painting, prevention of supersedure, which race and strain, whether to introduce queen or queen cell—are long stories which **are** controversial and which have been covered time and again in books and periodicals. The purpose of this article is to: (a) **wake up beekeepers** who are lethargic as to requeening; (b) **agree with** and emphasize the consensus about the general principle of requeening being desirable; and (c) **to question** the consensus of opinion as to the best time of year to requeen. Let us hope lackadaiscal beemen will take a new lease on life (bee life, that is). Let us "agree to agree" with the principle of requeening. Maybe you will "agree to disagree" with the third part of this discussion—when to requeen.

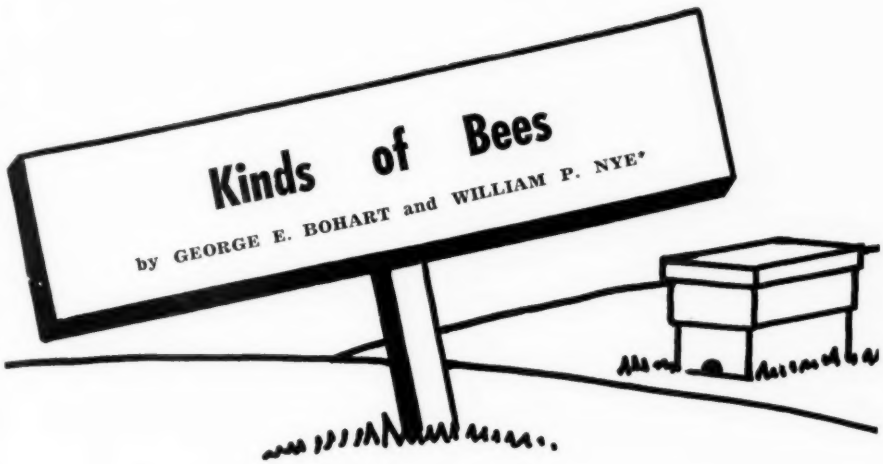
The weight of opinion on requeening runs about as follows:

1. Requeen in late July or August and during a honey flow — this accomplishes:
2. Gap in brood rearing so bees will be raised **for** the honey flow—not **on** the honey flow. .....
3. Energetic egg laying with consequent large young bee population in fall.
4. More honey from fall flow as a corollary.
5. Better conditions for wintering—i.e. young bees, many bees, more honey.
6. Better conditions for spring build-up—i.e. plenty of stores, plenty of live bees, plenty of pep in the queen.
7. Disinclination to swarm the following spring, i.e. young queen.
8. Improvement of colony propensities — better nectar and pollen gatherers, gentleness, good brood pattern, disease resistance, non-swarming tendency, tongue length, vitality, color, etc.

Let us examine these items. First, to requeen in late July or August **and during** a honey flow is a good trick if you can do it. However, late July or August is about the low point of available blossoms in many localities (excluding of course the late fall and winter months of inactivity). For all that, at least one recognized observer, Sechrist, suggested introduction during this inactive period. His theory of new queen and old queen colony balance in late fall occupies a good part of a book and shows the divergence of opinion on the subject).

Next, as to No. 2 above, gap in brood rearing so bees will be raised for the honey flow, not on the honey flow. The honey flow referred to, of course, is the fall flow. The point to remember about bees maturing in the middle of summer is that they cannot take part in the first flow, and they are too old to help in the fall flow. Hence, any break in the continuity of bees maturing in summertime is desirable if timed right. Emergence of bees for the spring and early summer flow is sup-

(Continued on page 379)



AT LEAST 5000 species of bees inhabit the earth. Some are no larger than the head of a common pin and most of them are smaller than the honeybee. However, the giant leaf-cutting bee of India is larger than a man's thumb. No matter how large or small they may be, you can practically always tell bees from other Hymenoptera by their feathered hairs and their habit of providing honey and pollen for their young. While most bees are solitary, here and there on the family tree the beginnings of social life are evident. The full flowering of social development is reserved for the family **Apidae.** Its species occupy the uppermost branch of the tree and include the well-known honeybees, bumblebees, and stingless bees.

When scientists are confronted with a vast assortment of physical objects, their first attempt is to classify the individual forms into closely related groups. These groups are then assembled into larger units until finally a unified structure appears that expresses the relationships between the forms and suggests how they originated. For living creatures the structural framework is best expressed in the form of a branching tree.

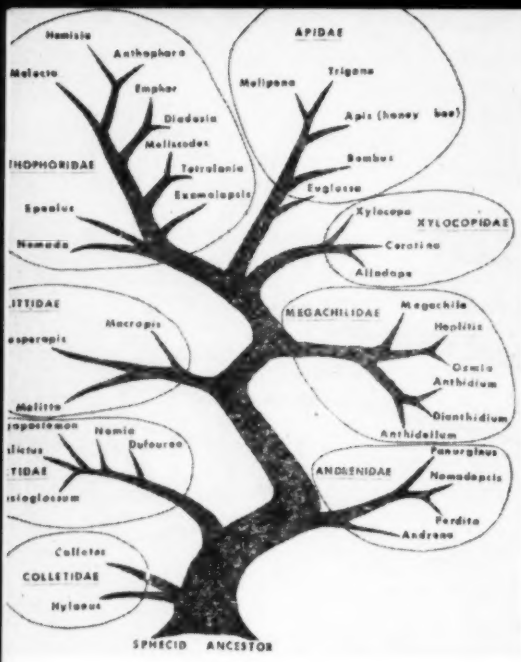
Hymenopterists agree fairly well on the major evolutionary branches of the "bee tree" (Fig. 1), although some would give only family rank to the whole group and others would divide the bees into even more than the eight families shown. Twigs, in the form of new species, are constantly being added to the tree. Every year our western deserts and mountains reveal many heretofore unknown bees.

The four families at the base of the tree are the "short-tongued" bees and the four at the top are the "long-tongued" bees. To be truthful we will have to admit that some of the short-tongued bees are longer tongued than the long-tongued bees, but these are only special cases where a few genera or species have gone off on tangents of their own. In such cases the bees involved are usually adapted to a single type of flower with a long corolla tube. In case you have an aversion to Latin names, we are listing the families below with their common names, some of which we had to "dream up" for this article:

Colletidae	— broad-tongued bees
Halictidae	— sweat bees
Andrenidae	— mining bees
Melittidae	— (no common name)
Megachilidae	— thick-jawed bees
Xylocopidae	— carpenter bees
Anthophoridae	— robust mining bees
Apidae	— social bees

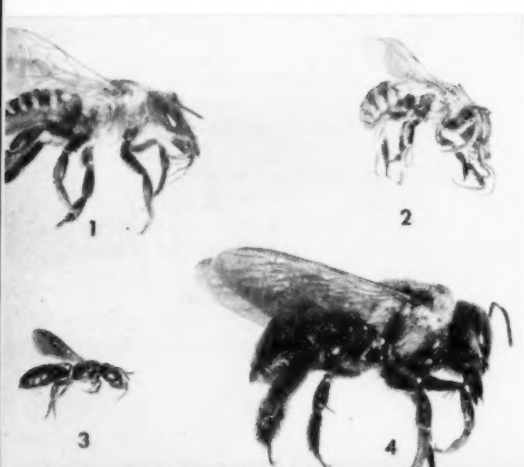
The family Colletidae with its short two-lobed tongue is supposed to be the most primitive group of bees. In this family the genus **Hylaeus** (Fig. 2) is decidedly wasplike in appearance and carries its pollen in the honey stomach

*U.S.D.A., Agr. Res. Serv., Entomology Research Branch, in cooperation with Utah Agricultural Experiment Station.



1. Family tree of the bees (only the more common or distinctive genera included).

2. 1. Hylaeus (Colletidae). 2. Halictus (Halictidae). 3. Nomia (Halictidae). 4. Colletes (Colletidae).



3. 1. Megachile (Megachilidae). Anthidium (Megachilidae). 3. Ceratina (Xylocopidae). 4. Xylocopa (Xylocopidae).

instead of in specialized external "baskets". The primitive nature of the Colletidae is also suggested by its strong representation in Australia, which is a stronghold of animals with ancient lineage.

The Halictidae is a large family, especially well represented in the tropics of the New World. Although facial characters and the presence of certain grooves on the thorax show it to be related to the primitive colletids, many of its members have developed a true social life somewhat like that of bumblebees. The best known genera can be told from other bees by a strongly curved vein in the forewing (Fig. 2). A narrow longitudinal groove on the last abdominal segment of the females of most species has given rise to the name furrow bees. The term "sweat bees" refers to the habit which many species have of landing on and sometimes stinging perspiring people. The Halictidae contains the alkali bee (**Nomia melanderi** ckll.) (Fig. 2), which has become famous as an alfalfa pollinator in the irrigated valleys of the West.

The family Andrenidae (Fig. 3) has more species than the other families, but its members tend to be small and inconspicuous. They are rather flattened and usually have round faces with grooves or shallow depressions just inside the eye margins. The genus **Andrena** has close to a thousand species, and in most parts of North America it is the most abundant group of wild bees. Most of the species in this family are almost impossible to identify because the available keys and descriptions are so unrelated and inadequate.

Melittidae is a small family, poorly represented in this country. The species bear a general resemblance to the andrenids, but lack the facial depressions and have several other basic differences. Strangely, **Hesperapis** (Fig. 3), which is the largest genus in our fauna, is found nowhere else but South Africa.

The genus **Melitta,** which includes the "alfalfa bee" of Europe, is represented in this country by four species, but they are so rare you could probably place all the specimens in museums in a single cigar box.

The family Megachilidae probably ranks next to Andrenidae in number of species. The outstanding feature of this family is that its members carry their pollen loads on the underside of the abdomen (Fig. 3). Another characteristic is the thick-set and powerful pair of jaws which they use to gather various materials for the lining of their

4. Andrena (Andrenidae). 2. Andrena (Andrenidae). 3. Perdita (Andrenidae). 4. Hesperapis (Melittidae).

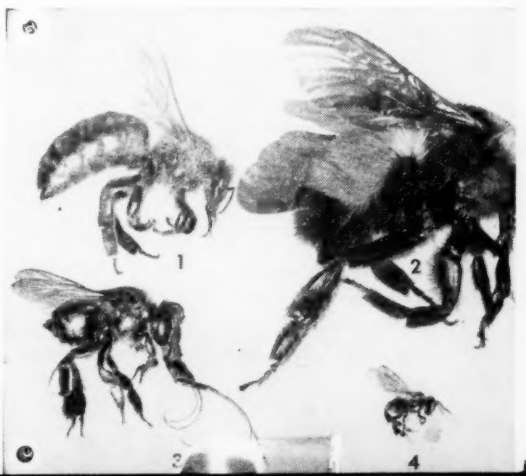
brood cells. Both the scientific and common names for the family refer to this feature. Many megachilids are conspicuous in appearance and in habits. The leaf-cutting bees (**Megachile**) and some of the **Osmia** are disliked because of their leaf-cutting habits, but they more than make up for this nuisance by their excellent performance as pollinators.

The family Xylocopidae has only a few genera and probably fewer than 200 species. However, by virtue of their size and their abundance near dwellings, the large carpenter bees (**Xylocopa**) (Fig. 3) are well known to the layman, especially in warm countries. In this country there are two distinct genera, the tiny twig-and reed-inhabiting **Ceratina** (Fig 3) and the

5. Anthoporidae 1. Anthophora 2. Melissodes 3. Nomada 4. Triepeolus 5. Neolarra. (3, 4, and 5 are "cuckoo bees")

outsized timber-inhabiting **Xylocopa.** Both genera are mainly black or bluish black and have large, round heads. The large carpenter bees can be told from bumblebees by their round heads and their brushlike pollen collecting apparatus.

The family Anthophoridae is about as large as the Megachilidae. We call its members the robust mining bees because most of them are stout and bur-



6. Apidae 1. Apis 2. Bombus 3. Eulaema 4. Trigona

(Continued on page 377)

Transferring Bees – the Driving Method

by R. L. PARKER, Kansas State College

Time of Year

A COLONY of bees, or a swarm which has been hived temporarily in a box, nail keg, or a crossed comb hive, can be transferred to a movable-frame hive without too much difficulty during the late spring and summer while there is a nectar flow in progress. It is much easier to transfer a colony of bees from a box than from a keg.

Use full sheets of foundation **during a nectar flow** to obtain good combs. If the bees are in a box, a new hive without a bottom board can be p'aced on top of the box after the top of the box has been removed. A bee tight junction between the top of the box and the bottom of the hive body should be made with strips of wood or other handy material. Enlarge the bee entrance in the box hive to the full width of the box, and place covers on the hive.

Driving the Bees

The entrance to the box can be smoked rather severely at the beginning of the operation, and then more gently, and at intervals during the time of transfer. Between times of smoking during this procedure, pound opposite sides of the box with sticks of wood. To the old-time beekeeper, this is known as "drumming" the box. This action will start the bees in an upward movement, and they will move readily to the foundation within the frames.

Retention of Queen in New Hive Body

After the bees have moved into the new hive body, it can be lifted and a queen excluder inserted between the box hive and the new hive body. This will prevent the queen from going below into the combs of the box.

Completion of the Transfer

As time goes on, the bees will move upward into the new hive body the honey which is in the combs in the box hive. The brood in the combs in the box eventually will emerge, and when

this has been completed, the box can be removed and the hive body placed on a bottom board.

The Cut and Fit Method

Tools Needed: Another method of transferring, but a messy one, is to cut out the good portions of the combs of the box hive, then fit and tie the pieces of comb in the proper position in the frames. A large, flat surface upon which the combs can be cut and fitted is the most essential apparatus. Soft twine, a long butcher knife, a container for scrap comb, and a pail of water are needed.

The Formation of Poor to Fair Combs in Order to Salvage Brood: Cut four pieces of twine the proper length to go around the frame and place them on the flat cutting and assembling surface. Next, place the empty frame on twine. Fit into the frames the pieces of comb with cells sloping upward toward the top bar. Tie the ends of the twine together. The frame and comb can then be placed in the colony. Within a few days, the pieces of comb will be fastened together and the twine destroyed. Only fair to poor combs may be formed by this method, but the brood can be salvaged.

Removing Bees from Buildings and Trees: One method, which requires about six weeks' time, of transferring bees from a building or hollow tree is as follows:

Use of a Bee Escape: Instead of tearing off boards and possibly injuring the building, or cutting down a tree, a person should begin by closing all possible openings except one. Over this should be placed a bee escape, either a Porter escape or a 6 to 8 inch high sheet lead cone, through which the bees can come out but cannot find their way back. The exit opening of the cone should be five-sixteenths inch in diameter.

Equipment Needed and Bee Behavior: A hive containing combs or full sheets of foundation should be placed with the entrance as near as possible to the bee escape. A bracket shelf is necessary to support the hive. A frame of unsealed brood containing both eggs and hatching larvae and adhering bees should be placed in the hive. The bees coming out of the cone and unable to find their way back will enter the hive, and the young bees emerging inside the building or tree will follow other bees to the outside and cannot return. As a result, the entire colony, with the exception of a few bees and the queen, will be in the new hive.

The bees in the new hive, finding themselves without a queen, will rear one from the hatching larvae in the comb provided. After four to six weeks, when the bees are well established in the new hive, and the young queen has begun to lay eggs, the bee escape or lead cone can be removed, allowing the bees access to the old brood nest. They will proceed to carry the honey into the new hive and all that is left will be the wax combs which, of course, cannot be obtained without opening the cavity. When the transference of the colony is complete, the colony can be moved to the desired location. In the new location, it will be necessary to use flight obstructions in front of the hive entrance to prevent the bees from returning to the old location (orientation). The bee entrance to the building or tree should be closed to prevent the place being occupied by another swarm. This transferring can not be done during the fall, winter, or early spring.

Exclusion of Bees: All openings through which bees can enter a building or tree should be found and tightly closed following the removal of the bees and honey.

"Now I know what I forgot . . . . the smoker!"

Produce comb honey the easy way

Says M. J. DEYELL, Editor

SOME BEEKEEPERS, especially beginners, shy away from trying to produce section comb honey because they are afraid they cannot attain success. Comb honey production does require a little extra labor, also some skill. It should not be attempted unless colonies are boiling over with bees and conditions are favorable for honey production.

During the years, we have been experimenting with different methods of producing section comb honey. Our experiences have led us to believe that it is entirely possible and practical to produce comb honey over a double brood chamber colony. This obviates the necessity of reducing a two story colony down to a single-story, also solves the problem of disposing of the extra story at the beginning of the main honey flow. It simplifies manipulation. We do not recommend double brood chamber colonies for comb honey unless the colonies are very populous,—boiling over with bees, and with conditions favorable for nectar secretion.

Type of Super Used

We have been experimenting with the shallow super which will hold 32 4 x 5 x 1⅜ inch sections. Instead of putting in the 32 sections, we use 24, making six rows of sections in each super instead of eight. We use two shallow extracting frames in each section super, one on each side of the sections. These frames should contain either full sheets of foundation wired, or drawn combs, preferably white virgin combs. It is necessary to use nine fences in each super.

These shallow combs on the sides of the sections serve as bait combs and attract the bees into the supers. As a matter of fact, the bees will start work on each side of the super, then gradually work toward the middle. We find that all of the sections are completely filled and capped over during a good honey flow.

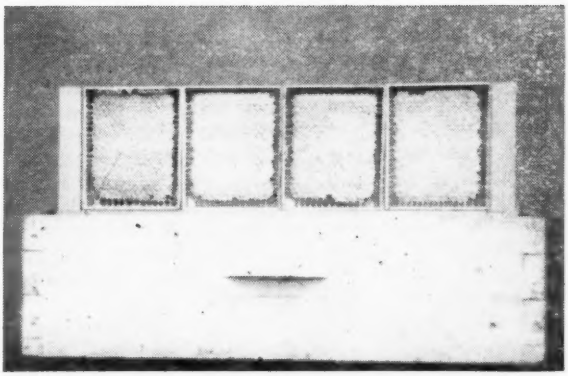
This idea which was used some years ago appears to have some distinct advantages. When conditions are right, we can count on a full case of section comb honey from each super as well as two filled shallow extracting combs on the sides.

The same idea can be worked with a super containing 4¼ x 4¼ x 1⅞ inch sections or 1½ inch sections in a half depth super. It may not be absolutely necessary to have a comb on each side of the sections but we find they help to attract bees into the supers.

Manipulation During the Honey Flow

Prior to the beginning of the flow it is usually necessary to put on one or two extracting supers during the dandelion and fruit bloom honey flow to make room for incoming nectar and thus avoid congestion which is said to be the main cause of swarming.

At the beginning of the main flow when comb honey supers are put on, the extra extracting super or supers put on earlier are removed, the bees shaken off the combs in front of each hive,



Four average sections from a well filled super.

then these supers are given to colonies producing extracted honey.

Putting on Comb Honey Supers

Our colonies in these double brood chambers are usually so powerful that we have to put on two and sometimes three supers at one time. Strong colonies may have brood in 15 standard combs, when the first comb honey supers are put on. We like to give bees ample room, especially at the beginning of a good honey flow. It is amazing what a populous colony of bees will do in drawing out foundation in comb honey sections, in a relatively short time, when conditions are right. If we gave only one super, we would probably find queen cells at the end of six days or a week. We aim to check our comb honey colonies regularly each week, for at least two or three weeks at the beginning of the flow, until the bees settle down to storing surplus honey and give up the swarming idea.

The double brood chamber lends itself naturally to a number of manipulations for swarm control. For example, if, during the first examination of the brood chamber after supers are put on, we find queen cells being started or eggs in cups, we remove all queen cells and place one of the comb honey supers between the two brood chambers and leave the remainder of the supers on top. This breaks up or separates the area of brood in the double brood chamber tending to relieve congestion.

This comb honey super placed between the two deep brood chambers should not be left there longer than a week because the sections might become travel-stained. It should then be put on top with the other supers.

On the second inspection a week later, if the colony still has ideas of swarming, queen cells should be removed and the position of the two brood chambers should be reversed or interchanged. This usually causes the colony to give up swarming. In a 40-colony apiary run for comb honey we had only one swarm.

Our experience has been that if we can control or cause colonies to give up swarming during the first two weeks of the flow, they will then settle down to work, and after that it is unnecessary to check through brood chambers each week for queen cells. We can usually tell from the behavior of the bees, or, what some call, entrance diagnosis, whether or not a colony is preparing to swarm. We do aim to have each comb honey colony headed with a good prolific queen that is reasonably young. However, some colonies with two-year-old queens do not swarm.

Advantages of Double Brood Chamber

(1) It is obvious that a queen in a double brood chamber hive has more comb space for egg laying than she would have in a single brood chamber. Since congestion within the hive is said to be the prime cause of swarming, such congestion would naturally be relieved to a certain extent by using a double brood chamber hive. We have found that at the beginning of the honey flow, a good queen usually occupies from 12 to 15 combs in both brood chambers and rotates from one to the

other. As the season advances and the flow tapers off the queen is driven down into the lower chamber and the upper brood chamber then becomes a food chamber filled with honey and pollen for winter stores.

(2) Furthermore, it has been our experience that the double brood chamber furnishes more comb space for the storage of pollen. In comb honey production, this means that there is less likelihood of pollen being carried up into the sections than is the case with the single brood chamber. Some perfectly fine comb honey sections are frequently spoiled because they contain a sprinkling of pollen in the cells. Double brood chambers help to eliminate pollen in sections.

A few years ago we produced cut comb honey in shallow extracting supers, using single and double brood chambers. We found that the supers on single brood chambers had considerable pollen, and supers on double brood chambers had practically no pollen. It would seem, however, that queen excluders used for cut comb honey would eliminate considerable pollen.

(3) It seems to us that a colony in a double brood chamber hive is stronger throughout the season than one in a

(Continued on page 383)

Managing Editor to Assume New Post

Walter Barth

AFTER SERVING three years on the Gleanings editorial staff, Walter Barth will relinquish his post as Managing Editor to become the new Manager and Vice President of The A. I. Root Company's manufacturing plant at San Antonio, Texas. Barth, who will assume his new duties July 1st, will succeed D. C. Babcock. The latter has been in charge of the Texas plant for eight years. Retiring, he and Mrs. Babcock will return to Medina to make their home.

After settling down in San Antonio, Barth will maintain contact with Gleanings in his new role as Field Editor. He will write a monthly column on honey and beeswax marketing based on notes from reporters throughout the country, and this will replace his current column, "Bee Facts". Mrs. Barth will continue to write her column, "News from Foreign Lands". The Barths plan to move to San Antonio in late June.

The 32 year old editor spent four years in commercial beekeeping in New York state before entering Cornell University to get advanced scientific training. He received a B. S. degree in Economic Entomology in June 1951, and earned a Master's degree in apiculture in June 1953 after completing a research problem on New York State honey plants. During five summers he served as a bee inspector with the New York State Dept. of Agriculture.

Mr. Barth joined the Root Company organization on June 8th, 1953 as assistant editor of Gleanings. He was later appointed associate editor, circulation manager, and finally managing editor. Simultaneously he also took part in bee supply advertising and sales promotion. During this period he also edited and revised the 3rd edition of "500 Answers to Bee Questions" and the 11th edition of "Starting Right with Bees", two famous beekeeping books published by the Root Company.

and estimated the nectar yield per acre for the various plants. I will bow my head even deeper to the scientist, and we have one, who has measured the nectar in one flower head, and gone on to count the flower heads in a square rod and so to the eventual results again, yield per acre. But what does all this mean to the commercial apiarist who has to hunt up a location for another outyard. Tomorrow it may mean something. Today it means very little. We can weigh a roast of pork to the tenth of a cent on the supermarket scales but no one, neither here nor abroad, has yet given us a hard and fast measure for weighing future honey crops. It is interesting to know that clover (probably) yields so much per acre but

OVERSTOCKING:

An American Viewpoint

Advanced by ROBERT M. MEAD

IN THE APRIL, 1955, issue of **The Scottish Beekeeper** a Mr. T. G. Stobie has an article with a very positive approach to overstocking. Clover yields 160 pounds of honey per acre, heather yields 140 pounds per acre. There are 3,200 acres of heather within reach of Mr. Stobie's theoretical apiary. By a process of deducting for bad weather and allowing for the colonies own needs Mr. Stobie arrives at some very amazing answers. His table of conclusions shows one colony will gather 20 pounds surplus, 22 colonies will gather 440 pounds surplus, and 25 colonies will make less than nothing.

If one reads the article about a dozen times one gathers that Mr. Stobie is a very well educated man who has taken his pen in hand and dug himself a hole he cannot climb out of. He figures very sharply and assumes a great deal. Even if we could accept his figures of yield per acre his table of apiary yield is ridiculous, at least for American beekeeping.

Let us first take up the matter of honey yield per acre for various honey plants. I bow my head to the authorities who have stuck their necks out from practical experience we know that it may well yield honey in a flood one year and nothing the next. What knowledge we actually have of nectar production might well be called an approach to knowledge; its ups and downs still remain one of nature's major secrets.

It is in the realm of surplus yield that Mr. Stobie leaves beekeeping behind and goes into the realm of fantasy. If one colony will make 20 pounds of surplus, he says, then 22 will make 440 pounds, making his table of yields not beekeeping, but merely an exercise in arithmetic. What we find in actual practice is that one colony, in almost any location where bees may be kept at all, will make from one to six supers of honey, and beyond that we cannot go by arithmetic but must proceed by trial and error. The location may be good for four colonies, or a dozen, or 30, or for any number up to several hundred. What really turns our hair grey is that 10 colonies may overstock an area one season while a hundred do not seem to get all the nectar the next. I believe the late Mr. Crane of Middlebury, Vermont, once said that it was

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impossible to have too many bees in a good season. And another beekeeper, north of there, in Vergennes, Vermont, once had the showiest apiary in the state with 300 hives in one location, where they did well.

If we cannot figure potential apiary yields by any slide rule method then how can we figure them? I believe that a beekeeper's own experience, plus the experience of other beekeepers, plus trial and error, are still the only true measures we have available. Nor does this leave the situation entirely open to guesswork as the words might seem to indicate.

Good beekeeping areas, as well as poor ones, become more or less public knowledge. This magazine has been publishing a series of articles with maps that outline the good areas and the marginal areas of the various states. The individual state departments of agriculture should be able to furnish at least general information as to the best locations within their respective states. Interviews with other beekeepers are always helpful but, of course, one has to take into consideration the fact that they may not readily encourage what may become competition.

While I do not believe any hard and fast rules can be given I would suggest two to six colonies in marginal and submarginal areas where bees may be kept just for fun or to make a little honey for home use, 12 to 30 colonies in intermediate areas where better crops may be expected, and from 30 colonies up in the good locations. There are, of course, dozens of factors involved that make it difficult if not impossible to give more exacting figures. A great number of colonies may be concentrated in a relatively small area at times for pollination purposes or if one was running for queens and package bees then more could be kept than if running for honey alone.

Changes in agriculture and other changes may also greatly affect the potential of a location. Our situation here, where we depend on wild raspberry to a considerable extent, makes a good illustration. Wild raspberry follows timber cutting and if there is heavy cutting we can expect a few good years to follow. If there is little cutting raspberry gets crowded out and production drops. How many bees are too many under those conditions? That is something the beekeeper has to watch. One year of failure can be accepted. Several years of poor crops cannot. The remedy; cut the number of colonies in a location, or preferably hunt up better locations.

Farm practice changes almost constantly and new plants are always being introduced. Cutting clover just before bloom for green silage could well have an adverse effect on a location but not all changes are bad. The increased use of legumes in the South in recent years has made honey producing areas out of some places that previously had only stimulation flows in early spring.

There are, of course, some locations so good that they attract too many beekeepers. One man makes good and a half dozen others move in, spoiling it for everyone. How can such situations be avoided? The answer is that unfortunate situations cannot always be avoided but there are some ways that one can try to avoid them. In any areas where large tracts of land are owned by one person or by a company the beekeeper who is alert may be fortunate enough to get exclusive location rights. Such deals are made every season on ranches in the West, on plantations in the South and on occasional large holdings elsewhere.

I have always favored registered locations with no one else to settle within two miles but I admit that it adds more complications to our already top-heavy laws. Such a simple thing as being in good financial condition and being able to weather a couple of tough years may at times be the answer to freezing out unwanted competition. I believe that this might well be a legitimate field of endeavor for the bee associations; to arbitrate location disputes and abuses. I would like to say right here though that beekeepers can be just as funny as anyone.

We tried in a small way at one time to make a map of present apiary locations in a good beekeeping area so that new locations could be picked without crowding anyone and we got just exactly nowhere. It seems that beekeeping, and beekeepers, have not quite come of age yet although the exact need of secret locations escapes me.

The next question that might well be

(Continued on page 376)

Revision of U. S. Standards for Grades of Comb Honey Proposed

REVISION OF U. S. Standards for Grades of Comb Honey was proposed today by the U. S. Department of Agriculture. The current U. S. Standards for the product have been in effect since August 1933.

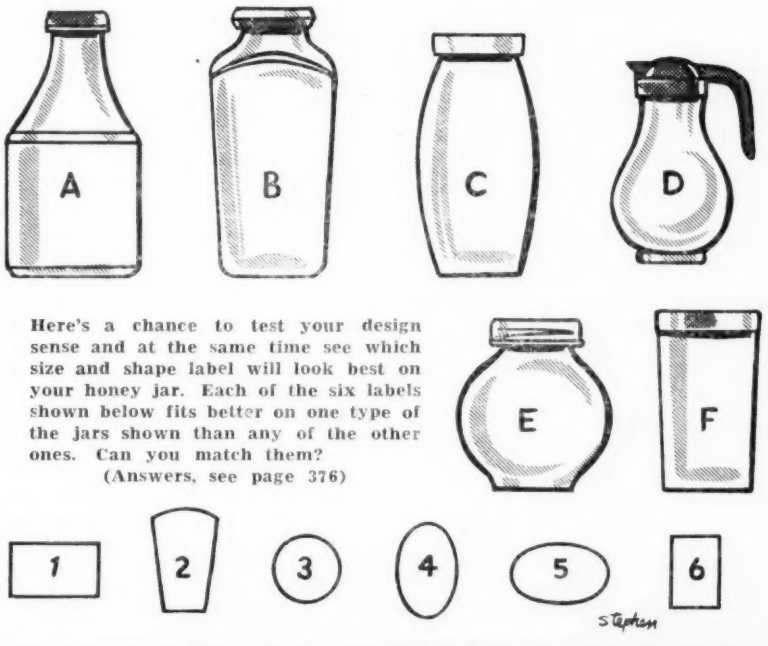
In the proposed changes, the grade of the product would be determined by evaluating the factors of flavor, color, defects, and character. The revised standards would be correlated with corresponding provisions of the grade standards for extracted honey. The grades are designated as U. S. Grade A or U. S. Fancy; U. S. Grade B or U. S. No. 1; U. S. Grade C or U. S. No. 2; and Substandard.

Provision is made in the proposed standards for a minimum soluble solids content of 81.4 per cent in all grades above Substandard quality. Provision is also made for minimum net weights of 12, 11, and 10 ounces unless otherwise specified for the respective grades A, B, and C of section comb honey.

The minimum drained weights of comb in chunk comb honey would be 25 per cent for containers of one pound and less and 35 per cent for containers over one pound net weight.

Methods are outlined for the classification of color and for determining soluble solids and other provisions of the standards. In order that these proposed standards may be examined by the industry during the current packing season, interested parties may submit views and comments until December 31, 1956, to the Fruit and Vegetable Division, Agricultural Marketing Service, U. S. Department of Agriculture, Washington 25, D. C.

Summertime – Label time



Here's a chance to test your design sense and at the same time see which size and shape label will look best on your honey jar. Each of the six labels shown below fits better on one type of the jars shown than any of the other ones. Can you match them?

(Answers, see page 376)

XUM

Sulfathiazole and Terramycin for AFB

A Report by

EDWIN J. ANDERSON*

SULFATHIAZOLE HAS been tested for the control of AFB in our bee yards over a period of years. The results obtained were favorable and were reported in Gleanings, July, 1955 issue. In spite of the success obtained from the use of sulfa there were three phases of its use that were not entirely satisfactory. The first was that the drug did not always provide a permanent cure unless the surplus honey was removed from the hive before and during the time the colony was being treated. The second was the necessity for feeding sulfa in sugar syrup rather than as a dust. The treated syrup was fed by sprinkling the syrup on the top bars and by placing a can of syrup above the inner cover. The treatment was most effective when given during a dearth in the honey flow. The feeding of syrup when there was no honey flow generally caused robbing which is, most certainly, not desirable in an apiary infected with AFB. The third was that a few colonies were slow to respond to treatment with sulfa indicating the possibility that the disease organisms are resistant to sulfathiazole.

Because of these handicaps, Terramycin as reported by Jamieson and Studier was tried as a control for AFB during the summer of 1955. The poultry formula containing 25 grams of Terramycin per eight ounces of the drug was used. This preparation was mixed with powdered sugar in the following proportions:

1 part Terramycin (poultry formula dust) to 1 part powdered sugar
1 part Terramycin to 2 parts powdered sugar
1 part Terramycin to 3 parts powdered sugar
1 part Terramycin to 4 parts powdered sugar

The Terramycin and powdered sugar were placed in five pound honey jars and mixed. Forty small holes, about 1/16-inch in diameter, were punched in the caps of the jars after the liners were removed. The liners were saved and replaced in the caps after each dusting. The jars must be kept sealed to prevent absorption of moisture. The mixtures were dusted on the top bars of each super of combs each time the colony was worked. Some of the dust fell between the combs and could be observed some distance below the top bars. The bars above the infected brood combs were dusted a little more heavily than those above the supers containing only honey.

A total of 20 colonies were used in this experiment. Each infected colony was dusted each time the colony was worked (three to five treatments) since dusting required only an extra minute or so of time. The disease free colonies in this apiary were also dusted a few times during the year as a precautionary measure. At least three treatments two weeks apart are recommend-

*Authorized for publication on March 7, 1955, as Paper No. 2049 in the Journal Series of the Pennsylvania Agricultural Experiment Station.

ed for all infected colonies when the disease is first discovered, then a treatment each time they are worked.

All colonies treated with the dust appeared to be cured from AFB and the scales were removed from the comb. The time required for removal of scales depended upon the severity of the disease and the strength of the colony. The scales were generally removed within eight weeks of the first treatment.

The colonies given the higher concentration of dust seemed to respond a little more readily to treatment but all the concentrations appeared to be effective as a cure.

Only one year of observations have been made with Terramycin but results were so encouraging that it was thought proper to make a progress report at this time so that others using drugs for the cure of AFB could benefit by results of this work.

When sulfa syrup was used as a control, the drug was used for at least two years after the last sign of disease had been observed in the hive. The same procedure will be followed with Terramycin dust and the infected apiary will be treated, each time the hives are opened, for at least two years after the last AFB has been observed in the apiary. This procedure will be followed since spores of AFB may remain in the honey in the supers and it is not known as yet how effective Terramycin is against infection from this source.

American Honey Institute News Notes

HARRIETT M. GRACE, Director

Commercial State Bank Building, Madison 3, Wisconsin

"The Story of Honey"

So you need a new bedtime story to read to your younguns; you can't bear the old favorite any longer?

Here's your answer: Read "The Story of Honey", written by Lloyd Dennis, printed in Canada, distributed here in the United States by the American Honey Institute. Here is an enchanting tale of the adventures and intrigues of the honeybee so charmingly written that both adult and child enjoy it equally. Here is a bedtime story that will put your children to sleep before it does you.

So you want to find a new way to spruce up your honey displays this year without going to the expense of color printing?

Here's your answer: Display "The Story of Honey" right along with your honey and watch the till tingle with sales! This book is brilliantly colored, uses unusual type faces to tell its story —thus becomes a display poster in itself. So display its vivid cover right by your honey this year and watch it capture customers for honey.

So you want to advertise honey but need a new angle for your copy?

Here's your answer: Use "The Story of Honey". Maybe you are not the only one who would like a fresh approach to a children's story. How about offering this book on a premium basis?

So you'd like to see for yourself what this "Story of Honey" is all about?

Here's your answer: Send 25c for two copies, 15c for one copy or $1.00 for ten copies to the American Honey Institute, Madison 3, Wisconsin and we will send you the evidence.

Extra Special

The American Honey Institute plans to have a brand new Honey Cookbook ready for you this summer. This recipe book is a collection of the Favorite Honey Recipes of the Famous Home Economists in Business. Each recipe is a jewel. The book as planned will be in two colors and contain more than 30 pictures. You will hear more about it later.

With this **Star Recipe Book** and **The Story of Honey** you'll create a better market and make more money.

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Efficiency in operating a small apiary

Reported by CHARLES GOUGET

ALTHOUGH THE small beekeeper does not have the overhead of the larger producer much of this advantage in competing for a market is lost through a lack of proper facilities to do his work efficiently. Since he can not afford high priced equipment that may remain idle much of the time, much of his work is done by hand using home-made devices that are often inefficient and may impair the quality of his product. It becomes a "must", therefore, for the small beekeeper to organize his work from the beeyard to the consumer in order to eliminate lost motion, save steps, and combine operations so that he may save as much time as possible. Time is money for the small beekeeper, consequently saving time may represent much of the small beekeeper's profit.

Efficiency in the Beeyard

Beekeeping on a small scale must be done as a supplement to some other occupation even though the beekeeper may manage several hundred hives. Under the circumstances many small beekeepers live in town and rent a small plot of land outside of the town for their bees. Often the plot may be donated by some good-natured farmer, but too often it is located on some inaccessible spot a long distance from town and perhaps a considerable distance from any good road, making trudging very difficult in bad weather. The most expensive location requiring a relatively high rental fee may be the cheapest in a long run if it is near a good road, while a location donated "scot-free" may be very expensive. The cheapest is not the best if it requires additional manual labor and time.

Usually the old family car is the small beekeeper's "truck" which, of course, is nearly always inadequate unless he is fortunate enough to have a small trailer attachment. As a result he must waste much valuable time shuttling back and forth to the beeyard over long distances, making two or three trips where only one might do with the proper equipment. These time-consuming hazards cost money and reduce the beekeeper's profits. Time is of the essence for the small beekeeper. He must combine and reduce operations wherever possible, i. e., reduce trips, combine loads, and save steps and manual labor by using tools and equipment that will help to expedite his work.

Efficiency in the Honey House

Many small, home-made extracting units are clumsy and inefficient because they take too long to do a relatively poor job. However, the progressive small producer will develop his extracting unit to the point where he can literally place the uncapped comb in the extractor and draw off the completed product into the bottle without extra handling, strained, heated to the proper temperature, and crystal clear. He will realize that unless it can be done in this manner there will always be room for improvement because he knows that time is of the essence. Someday, perhaps, such a unit will be placed on the market as standard equipment for small beekeepers, and when it is it will be one of the most progressive steps the industry has ever taken towards standardizing our product.

Extracting the Honey: Uncapping knives, like the carpenters' tools, should be sharp to make the work of uncapping faster and easier, and to prevent

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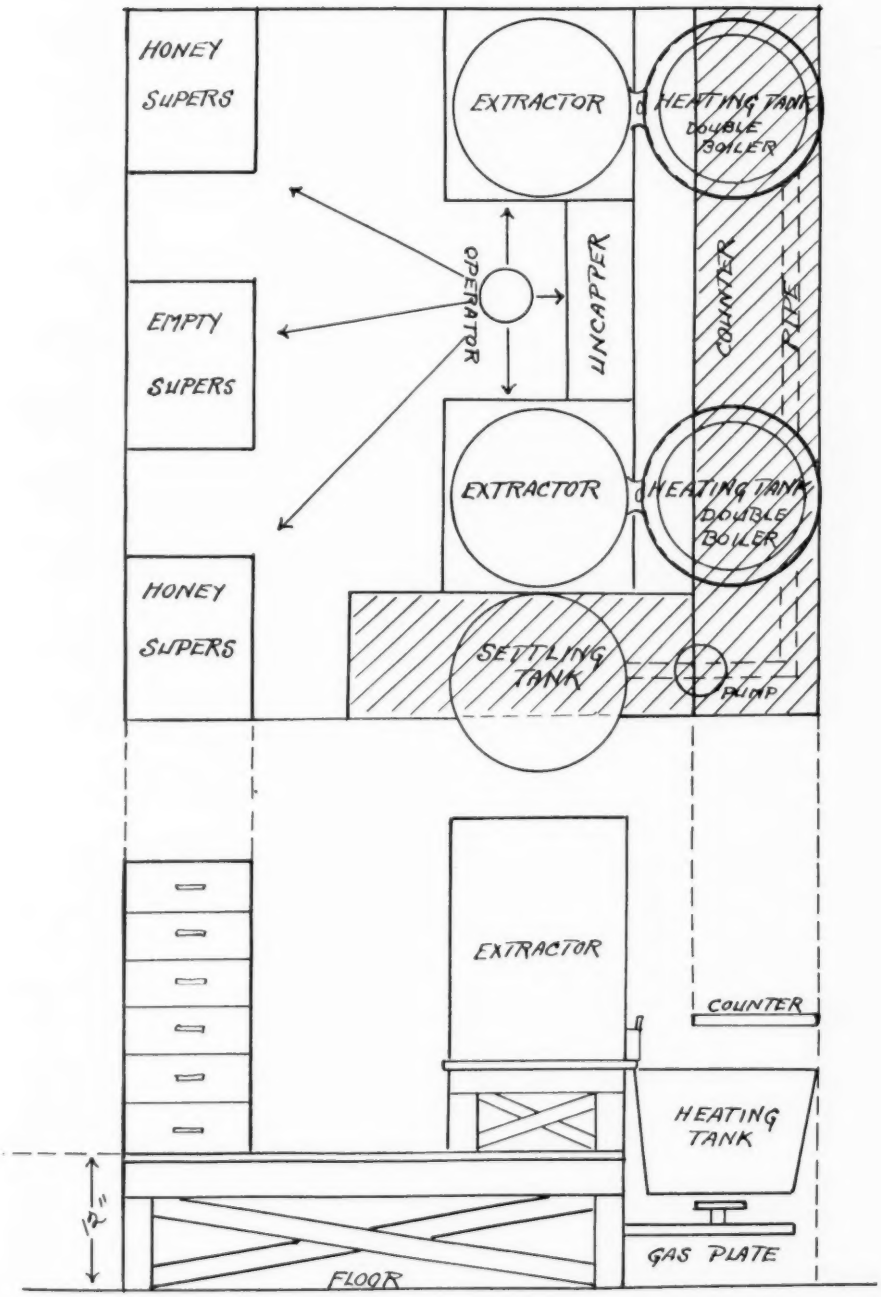

Diagram showing floor plan and elevation of the platform with its working advantages. Extractor elevations on the platform enable gravity to be used to fill the heating tanks. They also enable the petcocks of the extractors to be operated across the counter at a convenient table level.

the tearing of combs not filled with honey. In addition, sharp knives will enable the operator to make thin cappings, a fact which saves much good honey.

Because "small" beekeepers must always watch expenses many are equipped with extractors that are too small to do the job in a reasonable length of time. Wherever possible the extractor should fit the job it has to do, and manual power should not be used if it can be avoided. The time saved by a larger extractor may be enough to offset the increased cost of the larger unit. However, two inexpensive, four-frame, power-driven extractors can be used together rather efficiently by placing the uncapping operator between the two units and by alternating the runs between the two machines so that one of them is always in operation.

In winter much extracting time can be saved if the supers containing honey are stored in a warm place to keep the honey fluid. An electric heater that blows warm air against the supers may help in this respect if the honey house is cold.

Sticky floors are both unpleasant and unsanitary and tend to slow down operations during the extracting. They are not a part of the well organized honey house. However, much of the sticky floor problem can be avoided by confining all extracting operations to a small area so arranged that little if any walking is necessary in manipulating the extracting. This small area containing all the extracting equipment can best be limited by a platform about a foot above the floor. If the operator is careful there will be little lost motion in his work and very few drops of honey, if any, on the platform. At the same time the floor will remain clean for a long time. In addition, a c o u n t e r around two sides of the platform for pans, spoons, funnels, or other utensils will help a great deal to keep honey off of the floor.

Heating the Honey: Honey is heated to prevent crystallization and the higher the temperature to which it is heated the longer it will remain in a liquid state, but also the more it loses its "natural" flavor. Overheated honey tastes much like molasses and leaves the customer with the impression that the honey has been diluted with sugar sirup, which, of course, is not the case. In addition, overheating also changes the "natural" color, both facts of which add up to less demand and fewer sales.

Honey heated from 140 to 160 degrees F. maintains most of its "natural" flavor and color even though it may be heated over a long period of time. Apparently most of the volatile substances that produce flavor and aroma in honey are not given off at these temperatures. Therefore, accurate temperature c o n t r o l in heating honey becomes a very important factor in producing a quality product, and it cannot be accomplished by guesswork.

An objective, Fahrenheit thermometer should be used, and preferably the dial type so that the rise in temperature can be observed easily at all times during the heating process. Taking temperatures at intervals with the usual glass thermometer is time-consuming and undesirable for many of us who have reached the bifocal stage of our lives. Incorrect readings may result in overheating during the time interval between readings.

Settling Tanks: Tanks should be large enough or numerous enough to hold a maximum crop, and where bottling is done over an extended period of days they should be supplied with a source of heat to make the honey hot and fluid when necessary. If gravity feeding to the tanks is too slow to keep up the supply during bottling, an electric pump should be used, if possible.

Bottling: Heated honey should run like water for bottling and the spigot from the storage tank should deliver a volume of honey consistent with the size of the container. A small spigot used to fill large containers will waste too much time and add too much air to the honey, while a large spigot used to fill small jars will cause many accidents and waste honey. Automatic filling devices are ideal, but they are not within the "social" range of most small beekeepers. Unless a beekeeper is fortunate enough to have a labelling machine, the labelling of the bottles should be done during spare time in the slack season.

Storage Space: Shelves, dollies, and conveyors will help to speed up all operations in the honey house by keeping the floor clear of a forest of boxes

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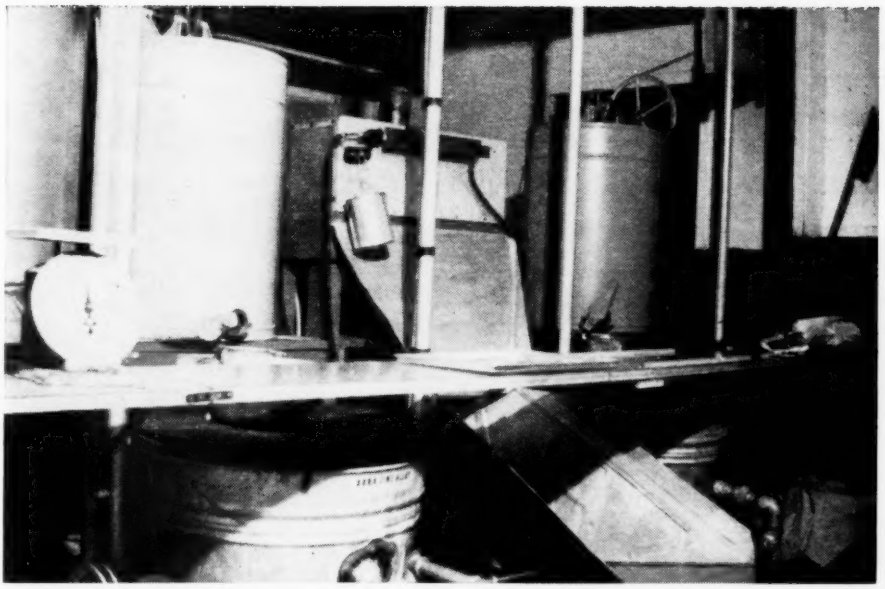


The platform about 12 inches above the floor keeps "sticky" operations confined in a small area at the same time saving many steps, and much time and energy. Sticky spots can be seen more readily from the floor level, and they can be wiped up more easily. The counter, too, helps to keep the floor clean by providing a place for dripping utensils. By alternating the extracting between the two extractors a continuous flow of honey is insured to the heating tanks.

and containers which tend to clutter the working spaces. Storage space like tank capacity should be adequate for a maximum crop and convenient to the extracting room to avoid extra steps and heavy hauling.

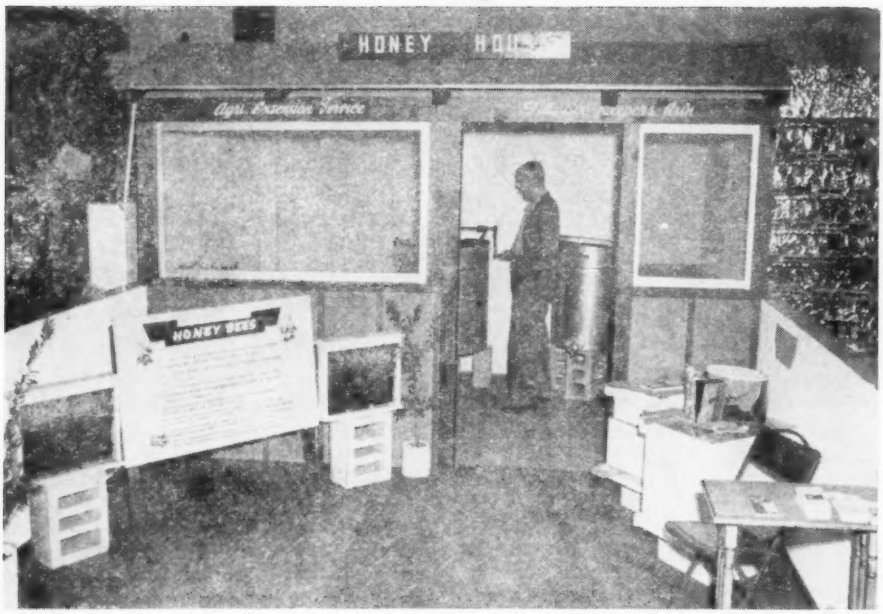
Efficiency in Selling

The small beekeeper will make the most profit when customers come to him at the apiary or at his nearby roadside stand. Every effort should be made to get rid of the crop at these sources, when it is possible to do so, since it will mean a great saving in time, effort, and expense, and a better price for the honey sold. Little if any profit is made on small amounts of honey delivered over long distances where the grocer may sell only one case of honey in a month or two. Unless there are more accounts in the same area it is questionable whether it is worth while for a beekeeper to bother with such accounts at all. Reasonable profits are made only by delivering relatively large volumes of honey to one or more distributors in the same area. Likewise, punitive sales made as a result of long, time-consuming sales talks had just as well not be made, in fact, the beekeeper may even save money by not making the sale. When a sale is completed the salesman should beat a hasty retreat as quickly as possible. It is always possible that the buyer may change his mind or the salesman may make another sale during the time wasted.

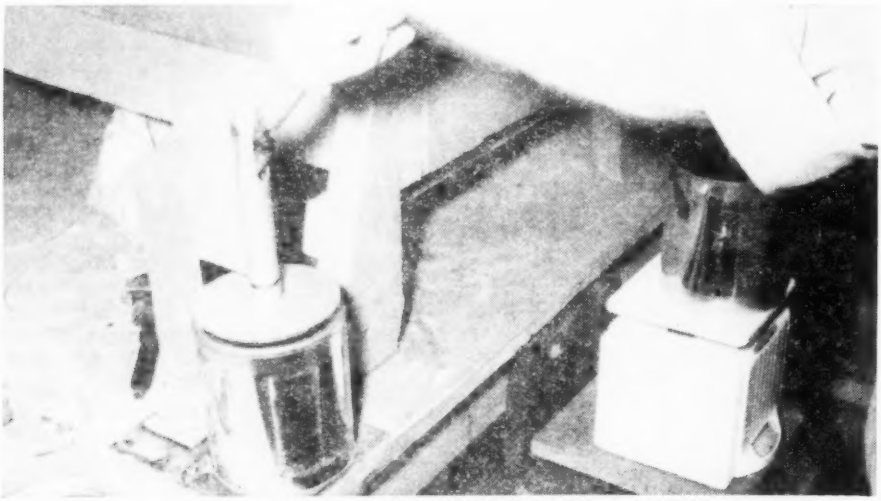
To summarize: Greater efficiency is needed in the operation of the small apiary to reduce the cost of production so that the small beekeeper can compete for a market more easily with the larger producer who has a much larger volume of honey and a much smaller unit cost. Efficiency begins in the beeyard and ends only when a superior product reaches a satisfied customer. It means discarding clumsy methods, reducing duplication, and travelling distances; it means saving steps wherever possible, and using power and labor-saving devices in an age which must compete on a mechanical basis. In short, it means saving time in every phase of honey production in the small apiary. Time wisely saved represents much of the small beekeeper's profit.

Glen Ellyn, Ill.

News Reel



DEMONSTRATION HONEY HOUSE. A demonstration honey house with proper equipment was set up by the Florida Agricultural Extension Service with the cooperation of the Florida State Beekeepers' Association. Free beekeeping literature was also distributed.—University of Florida photo.



HONEY PAILL SEALER. Fastened to the top of the table is the five-pound honey pail sealer developed by Michael Boczke, owner, St. Lawrence River Valley Apiaries at Lisbon, New York. Pails are filled quickly and firmly with this device.

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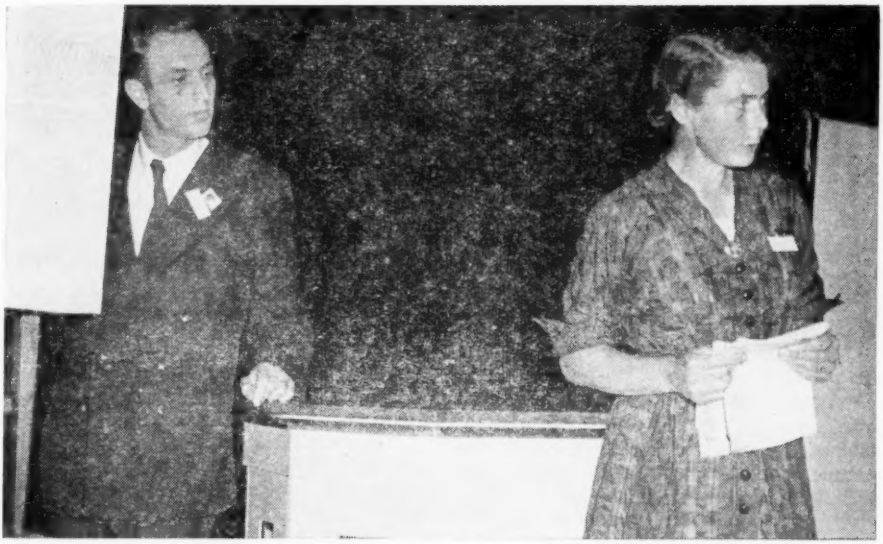
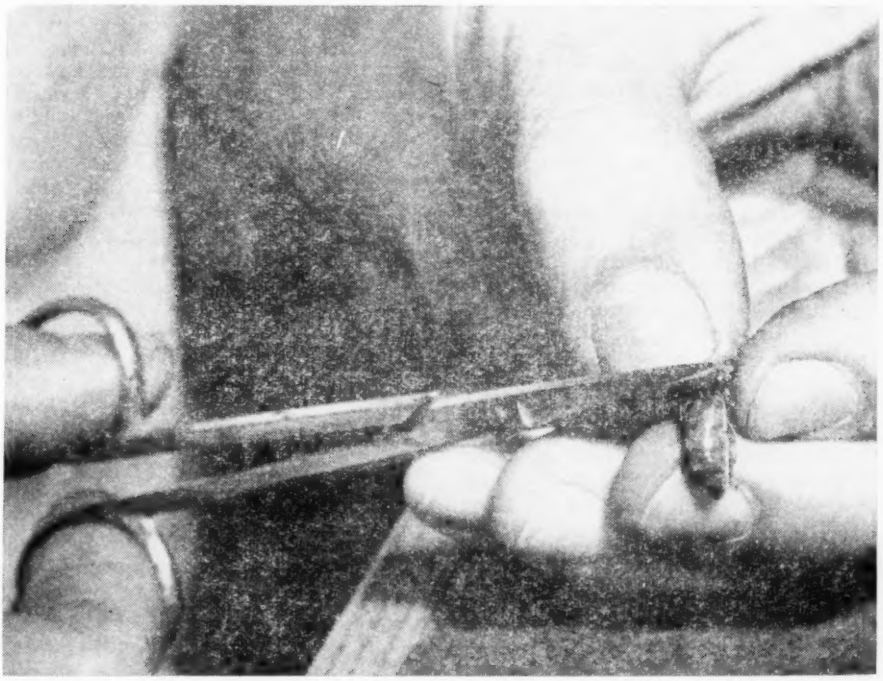


EUROPEAN BEE AUTHORITIES. W. W. Wittekindt (left) noted German beekeeping photographer and a student of bee behavior, is operating a visual aids device that accompanies the talk given by Dr. Eva Crane (right), Editor of the BEE WORLD.—Photo by Elizabeth Hoffman.



CLIPPING QUEENS. Clipping a queen bee's wing is one way to mark her for identification. It also keeps her from flying out of her hive with a swarm. She must be held carefully by the head and thorax during this operation. Apiculturists of the U. S. Department of Agriculture seek to develop new lines of honeybees that will produce more honey and be more resistant to disease than any now commercially available in the United States. Their research calls for breeding and cross breeding of large numbers of queen bees carefully selected for the purpose.—USDA Photo by Forsythe.

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HOW Storage Affects Honey

by VERN G. MILUM, University of Illinois

A FORM OR cause of honey discoloration is that resulting from storage in metal containers. With galvanized containers that are poorly tinned there may be some discoloration due to contact of the acids of the honey with the metal, especially iron, this resulting in the formation of iron tannates which gives the honey in that area an oily black color. This may be quite serious in the ungalvanized portions such as joints, cracks, and crevices of tanks and the fittings of pipe lines, honey pumps, and storage tanks.

Some of this type of discoloration may be eliminated by the use of glass or porcelain-lined containers, or largely prevented by making sure that all iron is well galvanized, especially at the seams and joints and by thoroughly removing all honey after each use.

A similar type of metal discoloration occurs around the lids of tin containers and those of jars where the inner seal does not prevent honey from coming in contact with the metal lid. The latter may be prevented by tight-fitting caps and by avoiding honey on the lips of the jars as they are being filled.

An examination of Figs. 1 and 2 herewith shown indicates the serious discoloration of honey stored at higher temperatures as compared to the lesser discoloration due to the original processing temperature. Since explanations given below each figure explain the general conditions which are discussed in much detail in previous publications, [1][2][3][4] only a brief review will be given here.

When four different honeys were heated to four temperatures of 130, 145, 160, 180°F. for 30 minutes, after storage for two years at ten different temperatures from 10°F. to 98°F., the total discoloration of each of the 16 samples at each storage temperature below 59°F. was relatively insignificant. There was a sharp increase in the color of all samples regardless of heating at a storage temperature of 79°F., while at 98°F. storage all of the samples had darkened so seriously as to fall in the "Dark" class on the Pfund color grader.

One may argue that no one would store honey at a temperature as high as 98°F., but this or even higher may be the prevailing temperature on a hot summer day. At a beekeepers' meeting, a beekeeper told of a temperature of 130°F. in his honey house that day, which is a serious condition since discoloration is a continuous daily process. It should be noted that the rate of discoloration was at practically the same rate through the first 133 days, then leveling off at a slower rate thereafter, regardless of the variable heating, and storage in glass and metal, as well as with an unheated sample.

In the experiment shown in Figs. 1 and 2, three lots of honey were used; namely, A—a mixed clover, white in color; B—an extra light amber fall honey, largely heartsease; and C—a mixed sample of old honey of various flower sources and ages, previously heated, and light amber in color. These three samples were placed in a common water bath maintained at a temperature of approximately 160°F. for eight hours. At half-hour intervals several samples were removed from

[1] Milum, V. G. 1948. Some factors affecting the color of honey. Jour. Econ. Ent. 41(3) 495- 505.

[2] The same reprinted in 1948 Iowa State Apiarist Rpt. pp. 52-64.

[3] Milum, V. G. 1939. Honey discoloration and loss of delicate flavor in processing and storage. Am. Bee Jour. 79(8) : 390-392, 416.

[4] Milum, V. G. 1939. Why does honey discolor during processing and storage? Am. Bee Jour. 79(9) : 445-447.

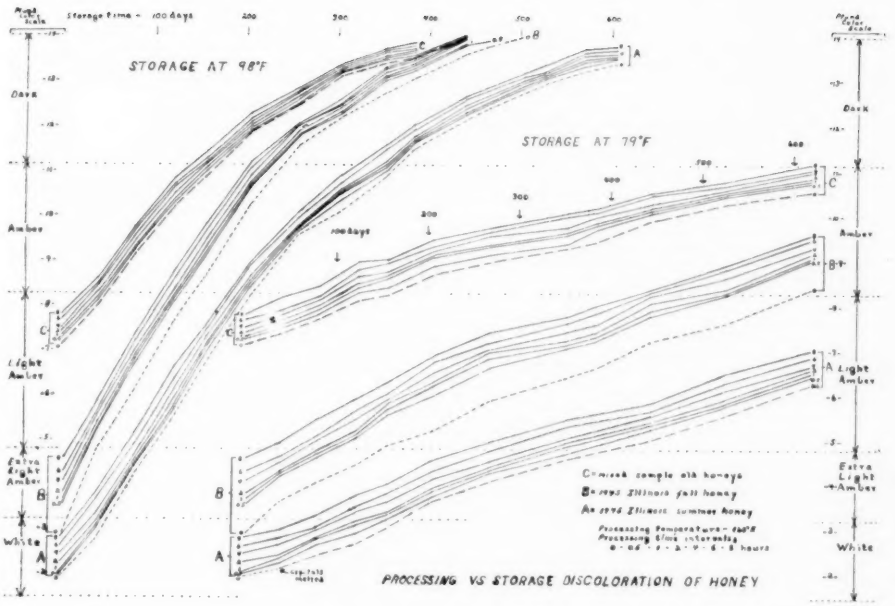


Fig. 1. Variation in discoloration of samples of two different unheated new honeys and a mixed sample of old honeys stored at 79°F. and 98°F., compared with similar samples heated to 160°F. and held for 0.5, 1, 2, 4, 6, and 8 hours, one lot of each stored at 79°F. and the other at 98°F. The initial color readings are indicated at the extreme left of the curves, the progressive changes to a darker color increasing during the progress of storage indicated at the top in days of storage. Note that the color change for the first half hour of heating in the extra light amber fall honey was extremely high and all of the variously heated samples of (B) darkened rapidly and were exceeded by the unheated sample during the initial period as well as throughout the 600-day storage period. Note also that all samples including the unheated samples of each of the three honeys increased in color at a more rapid rate during the early part (100 plus days) and thereafter at a slower rate. At the end of the 600 days of storage, each unheated sample was nearer the same color of the corresponding sample heated to 160°F. for 8 hours than previously, thus discrediting the erroneous idea that heating of honey tends to cause it to discolor more rapidly during a following period than a corresponding sample of unheated honey.

each lot and cooled. Color readings on the Pfund color grader were made after which corresponding samples were stored at 79 and 98°F. (Fig. 1), and at room temperature, both exposed to and protected from light (Fig. 2). Only the colors of the no heating, 0.5, 1, 2, 4 and 8 hours are shown in the graph.

It will be noted that the discoloration during the first half hour of heating of the extra light amber fall honey was nearly as great as that during the next seven and one half hours of heating. With the white new honey and the light amber old honey the discoloration during the initial heating was very slight. The initial discoloration in one half hour and the total discoloration in eight hours were for A-0.05 and 0.86, B 0.67 and 1.70, and C-0.13 and 0.68 cm. Pfund grader points.

A careful examination of Fig. 1 will indicate a greater rate of discoloration for all samples during the earlier part of the storage period with a gradual leveling off at a slower rate after 133 and 100 plus days of storage, respectively. Likewise the unheated samples discolored at a nearly parallel rate, with the total discoloration during the 600-day storage period (Fig. 1) being greatest for the unheated sample of each kind of honey under each of the storage conditions.

A careful analysis of the original data depicted in Fig. 1 shows that the rate of discoloration at a temperature of 98°F. may be as much as 3.69 times that of a similar honey stored at 79°F., the rate decreasing with the extended length of the storage period. While a sample of unheated clover honey was darkened only 0.05 cm. grade points

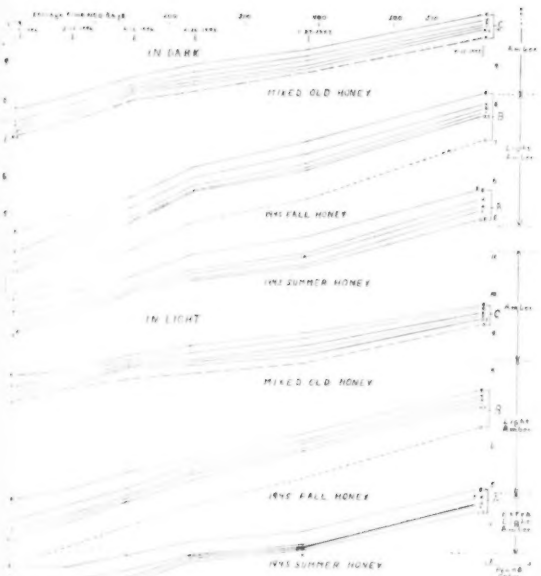


Fig. 2. Variation in discoloration of samples of two different unheated honeys and one mixed old honey stored at room temperature and separate portions of the same heated to 160°F. and held for 0.5, 1, 2, 4, and 8 hours, with one of each pair of samples stored with light excluded and the other exposed to ordinary daylight from a north window. These are portions of the same samples as shown in Fig. 1. While the variation in discoloration is not great, the samples stored in the dark definitely were darker at each reading during the 600-day period. If it is assumed that the same chemical changes as a result of temperature that cause discoloration took place in the two lots, then possibly the light has a tendency to bleach out some of the color in the exposed honey. The samples in the light showed a somewhat greater tendency to granulate than the samples in the dark.

by heating to 160°F. for 30 minutes, a similar amount of discoloration resulted when an unheated sample was stored at 98°F. for 1.64 days or 110 times as much in one half year of storage. Even at 79°F., the corresponding figure is six days, with nearly 30 times the heating discoloration in one half year of storage.

This data emphasizes the importance of keeping extracted honey at low temperatures, preferably below 70°F. The evidence also indicates that the amount of discoloration of a honey during any given period of heating or storage is in part dependent upon the amount of previous discoloration. **Any discoloration occuring during the processing of honey for marketing or during storage because of high temperatures tends to lessen rather than increase the rate of discoloration thereafter.** This refutes the incorrect statement made by some that the beekeeper who heats honey does something to it to increase later discoloration.

Sometimes the statement is made that the removal of colloids from honey reduces the tendency of honeys to discolor. If this were true, the filtering of honey with the use of diatomaceous earth should reduce the tendency to discolor. Our own results (Am. Bee Jour. 79:447) indicate that the difference in discoloration between filtered honeys and similar honeys strained through ordinary sugar sack towelling and stored for 1010 days was insignificant. Until further research gives additional evidence the report[5] of Lynn, Milum, and English in 1936 seems to indicate the three principal causes of honey discoloration as follows:

(a) an amino acid-aldeol combination;
(b) the combination of tannates and other polyphenolic substances with iron salts;
(c) the unstability of fructose which is probably of primary importance.

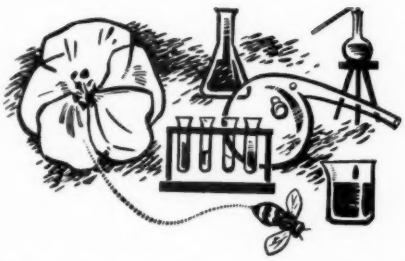
General Summary of Recommended Measures

Since the discoloration of honey is always accompanied by a loss of or masking of the original delicate flavor and aroma, every effort should be made to prevent darkening of honey.

To produce the lightest-colored extracted honey, it should be stored by the bees in combs built on new foun-

(Continued on page 381)

[5] Lynn, E. G., V. G. Milum and D. T. English. 1936. Effect of processing and storage on composition and color of honey. Food Research 1:256-261.



Bee Facts

(A Digest of Scientific Research)

Edited by Walter Barth

U.S.D.A. Workers Have Developed a Method of Determining if Sick or Dead Honeybees are Affected by Insecticides

FOR MANY YEARS the detection of insecticides in samples of dead bees sent to State or Federal laboratories has been a tedious and often almost impossible task. Research workers in the Bee Culture Laboratory at Beltsville, Maryland, have now developed a simple method for determining whether or not insecticides are responsible for the death of bees. This new method is valid only for determining the presence of an insecticide, but in those cases where insecticides are present a more thorough check for the specific insecticide can be made.

Brine shrimp (**Artemia salina**) are used to make the determinations. **A. salina** is a small salt water crustacean and nearly world wide in distribution. The life cycle of the animal is well known since it has been studied for years. Brine shrimp have been used as food for tropical fish and the eggs are easily obtained. The eggs are hatched and kept in a salt solution. The dead bees submitted for analysis (100 or more bees makes a good sample) are macerated and then treated with a solvent which extracts the insecticide. The extracted material is filtered and most of the solvent evaporated before adding it to cylinder of salt water containing the brine shrimp.

If an insecticide is present, the activity of the brine shrimp is reduced or they are killed. The time involved indicates roughly the amount of insecticide present. If the beekeeper knows or suspects which insecticide is present, further determinations can be made using standard tests. This new method of determining insecticide residues should greatly speed up the detection of harmful materials and determine positively those instances where insecticides are causing trouble.

Michael, A. S., C G. Thompson and M. Abramovitz. Use of brine shrimp for the detection of insecticide residues. U.S.D.A. Circular ARS-33-15. page 4. February 1956.

Why Nails "Pop" Out

FOR A NUMBER of years people have wondered why nails "pop" or "creep" out in wooden construction, even in beehives. Some experiments performed at Purdue University explain why nails frequently "pop" or "creep" out of the wood they are driven into.

The experimentors found that the diameter of the nail had very little to do with how soon, or how much, a nail would pop out. The shape of the nail and the surface condition or coating, with one exception, likewise had little influence on how well the nail stayed in place. It was found that cement-coated nails would pop out more rapidly than other nails though the difference was not too great.

The length of the nail has the greatest influence on nail pop or creep. Long nails, no matter what the shape or diameter, remain in place longer than any others. So far as beekeepers are concerned, this would mean that a 10d or 12d nail would be far better than 7d or 8d nails, most commonly used for nailing supers. Frames, too, might well be nailed with 1¼ or 1½ inch nails rather than with ¾ or ⅞" inch nails.

The above information deals with woods which are already dry. Popping of nails is also influenced by wood shrinkage. Wood which is unprotected and exposed to alternate periods of wet and dry will cause nails to pop out thus indicating the importance of protecting the wood with paint.

Suddarth, Stanley K. and Hugh D. Angleton. Nail Popping, a result of wood shrinkage. Agriculture Experiment Station, Purdue University Station Bull. 633. p. 41. January 1956.

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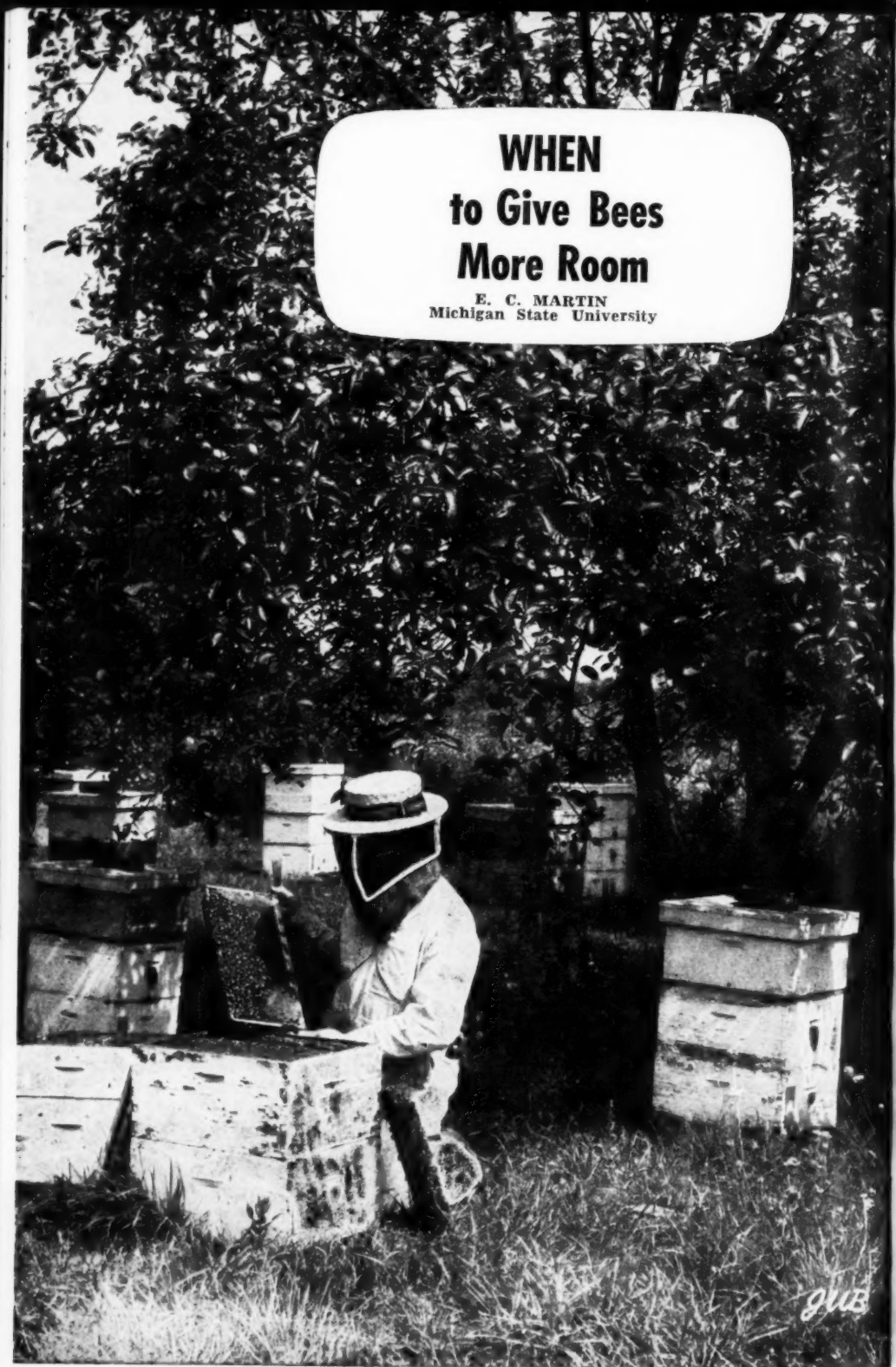

WHEN to Give Bees More Room

E. C. MARTIN
Michigan State University

THE ANSWER to this question depends to quite an extent upon the type of beekeeper to whom you are talking. In Michigan we have close to 8000 beekeepers and less than 500 of them keep over 50 colonies of bees. In general, the commercial beekeeper with two or more apiaries should incorporate system into his apiary management. He should attempt to coordinate manipulations to provide room for honey, pollen, and brood and also to control swarming.

Some one-apiary beekeepers get great enjoyment from trying out all the systems of manipulating to provide room and control swarming, such as the Demaree system, various two-queen systems, Snelgrove system, and others. All of these systems are written up in books and journals and the large or small producer can do much to improve his knowledge of bees and management by studying these different methods and trying them out.

Probably the largest group of beekeepers are those who keep one apiary for some honey and pollination, who consider bees a minor interest and find nothing but confusion in the multiplicity of methods of manipulating supers, brood chambers, and queens. This beekeeper likely falls down quite badly in doing necessary jobs at the right time. Rather than insist that he should carry out a complicated system exactly on schedule I think we should try to equip him with a simplified system that is as fool-proof as possible and will make provision for some leeway in the time schedule. If a beekeeper gets fair results from a simple system he is more likely to gain confidence and improve than if he fails with more complicated systems.

Let us limit our attention here to a one-apiary beekeeper who wants a reasonably effective but simple system of adjusting combs and hive bodies throughout the active season. For Michigan and areas with similar flows I believe he should adopt a basic philosophy of plenty. That is, plenty of room and plenty of honey and pollen for winter and spring.

We will assume that this beekeeper will winter theoretically in two-story hives but if he added supers for a fall flow and then did not get at his second extracting in the fall some of the colonies will winter with three hive bodies which is quite all right. He would be at fault, however, if he did get around to the extracting and took away too much honey.

Early spring checks for dead colonies, disease and food should never be neglected by this or any other category of beekeeper but the two or three hive bodies will accommodate the queen until early May. At this time he can divide strong colonies and give capped brood and bees to bought queens to make desired increase.

About the beginning of the dandelion and fruit bloom all except weak colonies could be in three hive bodies, without queen excluders. Many beekeepers are overly cautious about giving an extra hive body at this time, fearing that they will chill brood. It has been my experience that this does not result in chilled brood unless the beekeeper breaks up the brood nest and spreads brood so much that the bees cannot cover it.

Reversing of brood chambers about this time gives room without adding any more hive bodies. Many of the frames in the bottom hive body will be empty. Place the brood below and the empty on top. The queen will tend to work upwards again in her egg laying but this manipulation inhibits the development of the swarming desire.

Before the main flow, which comes here in early June, a fourth hive body may be added. At this point most systems advocate that the queen be found and placed below a queen excluder. I think that many beekeepers might well forget about this and be satisfied with a few visits to check and probably kill queen cells and move brood below the honey supers. Supers may be added as the flow progresses; being more restrictive on space as the swarming tendency dies down so that combs will be well filled.

A one-apiary man can take off honey by shaking and brushing the combs. If he has some brood in the supers this can be separated out and having a look at brood for AFB at extracting time is worth while. Extracting can be done here in mid-August and then a super added before the end of August, if the scale colony and the weather indicate that there will be a late August and

(Continued on page 374)

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Editorials

A Late Season

ACCORDING TO a semi-monthly honey report from Washington all sections of the country except the west are running from two to three weeks late. Almost continuous cool weather has kept bees from taking advantage of early nectar and pollen plants. In some areas brood rearing has been curtailed because of unseasonably cool weather. While some sections of the country are suffering from drouth, especially the west and north central states, parts of Ohio have had abundant rains. Colonies with stores have built up fairly well and should be ready for the honey flow. Clovers in this area appear to be very promising, and barring continuous dry weather later on when clovers are in bloom, there should be a crop of clover honey this year.

Does Beekeeping Pay?

THIS WOULD be a rather foolish question to ask some successful, commercial honey producers. However, during the past few decades, some beekeepers in areas where weather and honey plant conditions have been unfavorable for beekeeping have asked this question.

One thing in favor of beekeeping is that if a commercial beekeeper does not secure good crops in his part of the country, he can move to another where prospects look more favorable. A farmer cannot move his farm but a beekeeper can move his bees.

Some years ago it was said that there is no branch of agriculture that can be made to yield so large a margin of profit on so small an investment of capital as does beekeeping. It is necessary to produce maximum crops of honey at the minimum of expense. This constitutes successful beekeeping.

We believe that beekeeping, either on a commercial scale or as a sideline, does actually pay, especially in areas favorable for honey production. The recent increase in honey prices has served as an incentive to beekeepers to keep bees better and enlarge their holdings.

Beekeepers must discover the principles that govern success and then apply them, in order to make a reasonable margin of profit.

Bee Pastures Declining in Some Areas

WE RECEIVE REPORTS from some parts of the country that honey plants that were once quite prevalent and from which bees stored a considerable amount of surplus honey, are now conspicuous by their absence. This is especially true in some parts of Ontario. As a matter of fact, the number of colonies in that Province has declined considerably during recent years. This is also true of some states in this country.

Some years ago there was a considerable amount of alsike clover grown, some of it for seed. Naturally the bees had an opportunity to store a considerable amount of surplus, especially when it was left for seed.

At present, the various clovers that are grown for hay are usually cut early, just as soon as they begin to bloom, in order to take advantage of the maximum protein content in the hay intended for feeding stock. At least this is the reason farmers give for cutting early. To see a nice field of alsike in full bloom being cut down or a field of sweet clover being plowed under just as it has come into bloom is a sickening sight for beekeepers.

In areas where alfalfa is grown and cut a number of times during the season it is usually cut just as it comes into bloom. Sometimes beekeepers secure

some surplus honey from it if weather conditions prevent the farmers from cutting it. Where alfalfa is grown for seed in certain parts of the country where it yields nectar, beekeepers do secure some honey.

It was brought out at a Michigan summer meeting a few years ago that commercial beekeepers who have beekeeping locations near marginal land secure larger crops of honey than beekeepers in heavily farmed areas.

About 15 or 20 years ago farmers in western Ohio used sweet clover in their crop rotation and this clover was left for pasture. During those days beekeepers secured large yields of surplus honey. Since that time crop rotation has changed and honey crops during the past ten years have declined considerably. However, there appears to be more sweet clover grown in parts of Ohio the past few years than was the case some years ago and this is encouraging for beekeepers.

It would seem that commercial beekeepers have to be ready to meet changing situations. To secure crops of honey it is sometimes necessary to move apiaries. While this involves considerable amount of work, it usually pays in the long run, especially if the beekeepers are equipped for migratory beekeeping.

Making Bee Meetings More Interesting

THE FREE SOCIETY in which we live gives us the privilege of holding meetings whenever we choose. This privilege may not be accorded all peoples of our world. Beekeepers, like people in all walks of life, enjoy getting together periodically to talk over their problems, exchange ideas, and become better acquainted.

Beekeepers' meetings of county, state, or national levels, tend to strengthen our industry and to bring about a better understanding of our problems and objectives. In order to have successful bee meetings, the objectives or reasons for such meetings should be kept clearly in mind. Some organizations fall apart for the lack of clearly defined objectives.

The meeting place is an important consideration. It should be properly lighted, ventilated, and heated during the winter months. The chairs should be reasonably comfortable.

Programs should be planned intelligently in advance and varied to meet the needs of the season or time of year. An out-of-town speaker occasionally is usually a drawing card. It has been found, however, that home talent and member participation are what generate a lasting interest. A question and answer session usually goes over well. It may be advisable to have the questions written and placed in a box, especially since some of the members might not wish to display their ignorance publicly. An occasional movie on bees is always appreciated. There are a number of these available at the present time.

Association officers should be chosen with care. The president should insist on having the meeting start on time, also stop on time, if at all possible. Refreshments can be served as a pleasant climax to a good meeting. The menus should be kept light, unless the meeting is a special banquet. It has been found that beekeepers can become quite well acquainted while sipping some hot coffee and nibbling on a sandwich or doughnut. If people went home directly after the meeting they might not have an opportunity to become acquainted.

Since our industry at the present time is in need of more young people to take the places of those who are retiring from active beekeeping a special effort should be made to invite young people and have programs that are appealing and down to their level. Boy scouts who are taking merit-badge work in beekeeping, members of the FFA group, and also members of 4-H Club, should receive a cordial invitation to meetings.

County beekeepers' associations are at the very grass roots of our industry and should be encouraged. During recent years interest in beekeeping associations has been lagging. It would appear that since there is now an upward trend in honey prices due to a greater demand for our product, the general interest in beekeeping is being revived. Officers of beekeepers' associations should take advantage of this interest in making meetings more interesting and worthwhile. To make meetings a real success, a few people have to do a lot of hard work.

XUM

FROM Foreign LANDS

Translated and Edited by Erika Barth

Honey as a Surgical Dressing

THE EXTERNAL application of honey as a surgical dressing dates back to the ancient Egyptians. During the Middle Ages it was also used as an ointment for wounds, burns, and other skin problems. Currently Continental European clinics are using honey in some instances. However, it has been difficult to secure any medical data until the publication of the report, "Honey as a Surgical Dressing" by Michael W. Bulman, M.D. (Obstetric and Gynaecological Surgeon, Norfolk and Norwich hospital, England) in the BRITISH BEE JOURNAL.

The English physician reports, "Having started with a measure of scepticism on my own part and that of my staff, all those who have seen the effects of honey dressings have become convinced of their value.

"Honey applied to external ulcerated or infected surfaces has a definite bactericidal power, the result mainly of its hygroscopic action. This action is seen shortly after its application to a raw surface in the free flow of lymph which is produced. The rapidity of cleaning of an infected, purulent surface is often remarkable, while the separation of any sloughs which may be present follows more quickly than is usual with most types of local application. A notable feature is the way in which the honey itself appears to be absorbed, though the gauze on which it is applied remains moist and adhers little, if at all, to the tissue surface. The apparent absorption of the honey encourages one to believe that its nutritive properties may also have a helpful effect on local tissue regeneration and healing.

"Honey contains dextrose and levulose and in addition contains variable but significant amounts of minerals, including iron, and vitamins, particularly B and C. All these substances are essential to rapidly growing tissues and if absorbed locally could in part at least account for the rapid formation of healthy granulation tissue which is seen to occur. Furthermore honey is neither toxic nor irritating, producing no harmful effects on the tissues either locally or generally. This fact together with the absence of adhesion of the dressing, which avoids injury to the granulating tissue when dressings are changed, ensures that full scope is given to the healing capacity of the patient.

"My experience of the use of honey as a wound dressing has been limited almost entirely to cases of vulvectomy, usually but not always combined with dissection of the gland areas of both groins. This operation, in an area in which skin disinfection is obviously difficult, is well known to result in a raw surface which takes months to heal completely. It has for some time been my custom to dress this surface with gauze soaked in flavine in glycerin for 24 hours after the operation. At the end of this time the dressing is soaked off and replaced by honey dressings which are continued, with daily replacements, until healing is so nearly complete that a plain dry dressing only is required.

"At an earlier stage in my use of honey I used to wait four or five days before commencing the honey dressing. I then found that by the time the honey was applied sloughing was usually well marked and it was my impression that the effects of the honey, though quite apparent in a few days, would be more rapid if the sloughing could at least in part be prevented by earlier application of the honey. This earlier application appears to me an advantage and I now see no reason against its use from the time of the operation.

"When dealing with a large surface it is best to use liquid honey. If granulated honey is supplied it can be liquefied by careful warming. In the liquid condition it can be poured evenly over the surface to be treated or

(Continued on page 378)

Live and Learn

by Propolis Pete

WE DO a lot of kidding here about bees not reading the right books. So many times it seems that nothing comes out the way that the books say it will. There are a lot of reasons why this is so, the main one being that the bees never do anything invariably. There are too many side issues that alter the reaction that you think they should take. When you read that bees will swarm if crowded, that is perfectly true, but there could be a dozen conditions within the hive that you don't know about that would change their reaction.

We read that plentiful stores of both honey and pollen are essential in the spring. Yet we see colonies pull through on a starvation basis. Ordinarily I do not worry about spring pollen. Generally pollen is so plentiful that sometimes it is a nuisance because the bees gather and store so much more than they can possibly use. I always thought that that was the reason why my bees wouldn't take the various pollen substitutes that I offered them while experimenting to see what difference incoming pollen would make.

I had to hive my packages this spring on dry drawn combs. The storms last fall had ruined my supply that was being saved for new packages. Because pollen came in early and fast I figured that I had nothing to worry about, also I figured that substitutes would take up the slack if any developed. But was I wrong? I'll say I was.

My bees arrived on April 6th, and were duly fed and tucked into their nice new homes. They were supplied with sirup. Pollen cakes made in the usual manner were set in the inner covers. Then the trouble started. We had a record-breaking cold wet April. Even some snow. The bees were clustered so tightly that you would think it was the middle of winter. They could not get out to gather natural pollen, AND they did NOT take the pollen substitute. I was using the soy-yeast combination mixed into cakes with honey until they formed a thick dough.

It was so cold and miserable that I hated to open the hives. But I had to, to keep track of what was going on. The queens were all released, and judging by the action of the bees, were accepted. I had to go by their actions, because I couldn't find eggs. They were clustered so tightly that you couldn't see the combs. After three or four days, I pried the bees apart and looked, and here and there saw an egg. No pattern, just an egg here and there. After two weeks of this, I found a couple of thin, puny larvae that didn't look too happy about the shape they were in. There were none of those fine fat worms nicely curled up in the cells that you see when a colony is prosperous. Apparently the queens were laying when they could, and either the eggs were not hatching or the bees couldn't feed them when they did.

Well, to make a long story short, I started experimenting with the mixture of the pollen substitute. I fed it dry outside in boxes. The bees didn't go near it. I made up new cakes, using more honey and less flour. Still no attention. Finally I got down to the point that the darned stuff was so thin that it would run. I fed it on the inner cover, and in pans on the bottom board. The bees didn't want any. Finally I put some in a pan outside, and a few bees came over and looked. They got their wings fouled up in the mess, but they only sniffed and didn't take any home with them.

The net result of all this is that after nearly four weeks, when I should have plenty of emerging brood, I have eggs and a few sickly larvae about half developed. There is some variation from colony to colony. At the end of the third week, one or two of them had a few scattered sealed cells, but none nearly old enough to emerge.

My pet three-quarter depth colony got the de luxe treatment. They didn't get plain sugar sirup. They got real honey saved especially for them. And, while they were not what they would have been if they had combs of pollen, they did raise ten times as much brood as the others, and are just about ready to start emerging as this is being written. There is some proof that honey stores are better than sirups, eh wot?

We have to stop this for now, but if anyone got a lesson on the importance of having natural pollen stores for the bees in the spring when the weather is unpredictable, it was me.

Beekeeping in Rhode Island

by HOWARD A. PIKE, Rhode Island Apiary Inspector, Providence, R. I.

RHODE ISLAND is the smallest State in the Union. The total area is 1214 square miles. Total land area, 1058 square miles and inland water area 156 square miles of Atlantic coastal waters. The greatest length of the State, north and south, is 48 miles, and the greatest width 37 miles. The length of the mainland, at the tidal high water line, is 360.2 miles; length of off-lying islands, at tidal high water line is 23.7 miles. Not only being the smallest State it is the most densely populated, having 749.2 persons per square mile or about 800,000 persons in all.

The highest point in the State is Jerimoth Hill, in the town of Foster, which is 812 feet above sea level. Narragansett Bay extends in from the sea 28 miles, and its width varies from three to 12 miles. The coast line of the State is 400 miles long. Being the smallest State it is one of the oldest as it is one of the original six New England States.

Because two-thirds of the area is covered by woodlands and water the other third does not leave much room for beekeeping. Twenty years ago there were 650 beekeepers here but today that number has dwindled to about 350. For the last six years the average number of colonies per year has been about 2000. The average pounds per colony is about 20 pounds yet I have seen a few colonies produce 100 pounds in a good year. There are no primary or secondary regions, etc., here because you can set a colony down most anywhere in Rhode Island, except in dense woodland and with proper colony management get a crop of honey. There is no wintering problem if the beekeeper practices good management. The last four winters have been quite mild and no packing of hives was necessary. Just keep young queens in the colony and pack them in honey and they will survive most winter weather here.

In this state we are fortunate in having some nectar-bearing plants in bloom most of the time from April to November. Some of these plants produce nectar in abundance when weather conditions are right, while other plants yield nectar sparingly. Some nectar from one source or another is coming into the hives almost all season long. The plants which furnish sources of honey in Rhode Island, in the order of their blooming period, are: the willows, maples, and elms, followed by less important shrubs and plants which furnish the bees with early supplies of pollen and nectar so needful in building up the bee population preparatory to the harvest later on. Next come fruit blossoms, including plum, cherry, pear, apple, raspberry, huckleberry, and blueberry, which, when the season is favorable, yield good crops of honey which is of course used by the bees in building up the colony. As a rule, pollen is abundant for early brood rearing and no substitutes are necessary unless a colony is weak at this time.

Dandelions are not of much importance here but do yield pollen. Locust is abundant in some places and when conditions are favorable it yields a heavy, water white honey for about eight days. Where soil conditions afford abundant moisture, clovers produce some of our best honey, but unfortunately, clover is rather scarce here. The next source is from the sumacs, which, when abundant, furnish the main crop, although they overlap clethra (sweet pepper bush) in some seasons. Together they both make a good crop. Swampy and less settled sections give us button bush, clethra, and clematis which all yield a white and highly flavored honey. All these plants usually yield nectar very sparingly, but occasionally the yield is abundant. European lindens, numerous in some cities and villages, are sometimes heavy yielders. The season closes with the goldenrods and asters, which in some years have heavy yields of rich and aromatic honey. Most good beekeepers leave this honey on the hives to add to the winter stores as insurance against starvation. If I have any preference for the best places to keep bees here I would favor the southern half of the State although fogs from the ocean are sometimes bad.

Queen Introduction

as advocated by MILTON STRICKER
Annadale, N. J.

AT A RECENT bee meeting, the discussion turned to a brand new foolproof method of queen introduction. Well, it was about as foolproof as they declared, but it was far from being new. How old this gentleman made me feel. This was the method by which I introduced my first queen 23 years ago.

At that time this method of foolproof queen introduction was in vogue and I, just entering the business, had to try it. Briefly, it was taking the attendants and candy away from the queen when she was received by mail, letting her starve for 20 to 40 minutes and then placing her directly (without candy) on the top bars of a colony that had just been made queenless.

This same system was sometimes used when the queen was a laying queen taken from a nuc and then introduced into a colony. In that case, the queen in full lay could be brought to the "distress" or "acceptance" condition in five to ten minutes due to her high food demand. This system was foolproof as far as the bees were concerned, but some of the beekeepers were not, and many reported they got anxious and put the queen in too soon and she was "balled" and killed, or they forgot about her and let her starve.

About this time, New Jersey queen breeder, Henry Brown, began to advocate a system he had seen used in a recent trip to Russia. This meant shaking the bees off of the frames, letting them run back into the hive, and shaking the new queen into the mass and letting her run in and be accepted in the queenless confusion. A good system, it worked well. Queens received in mailing cages were usually wet with water or had a wing clipped, so they wouldn't fly and the job was completed as soon as the old queen was found, killed, and the workers shook out on the ground.

Some of the faint-hearted protested a little at this rough system and the late E. G. Carr began to advocate the removal of all attendants, introducing the queen alone in the mailing cage, letting the bees in the hive feed the queen through the wire until they were able to eat the confining candy and release the new queen. This gave good acceptance and was widely accepted. In fact, it was so well written up in bee journals that for awhile it became the most popular way of introducing queens with beekeepers in the northeastern part of the United States.

In the meantime, there was still the old agitation by beekeepers with their special introducing cages, the Mel Pritchard cage, the Latham cage, the Jay Smith, the "E-Z-Way cage", the modified Doolittle cage, and many others working on the same principle that the outside bees could get into the cage, investigate the queen before she entered the hive proper and began to lay.

I'll admit I tried all these cages, and almost every method advocated for queen introduction. Though there was element of merit in every one of these methods, the big lesson seemed to be that the equipment used in introduction was secondary. Of prime importance was the condition of the colony that was being requeened.

Briefly, in New Jersey, the push-in cage where the queen was confined over some emerging brood so she could be fed by these young bees who were supposed to be free of "new-queen-prejudice," was popular. When the queen began to lay, the push-in cage was removed and the new queen went on in an uninterrupted activity of laying eggs.

The obvious time and work of this system, the resulting burr comb, the nuisance of the idea, soon put it back into limbo, where it had laid for some time before, because this system, like the other cages, was just making a reappearance from the early 20's when

cage type introduction was popular.

Through the years I kept trying all the systems so that I eventually worked out my own, which contained nothing original, merely the good features of all the systems.

The Method I Like Best

I like introducing queens taken from nuc boxes where they have been reared for just that purpose. The nuc box is carried to the colony that needs requeening; the old queen is killed; the colony is smoked well, and the new queen and her bees and two or three frames of her brood are placed in the center of the original brood nest. If no nectar is coming in the hive at this time, a feeder can of sugar and water is inverted over the top of the colony. If there is an unusual dearth of nectar, sugar syrup is often also fed the colony 24 hours before the introduction takes place.

This system is fast, offers no break in the brood cycle and, of course, peps up any weak colony. It also lessens the danger of having the queen killed by a second queen that was in that colony unknown to its owner.

This happens so much more often in a colony than most operators want to believe. Many colonies that are marked for requeening will have that failing mother that makes you condemn the hive and a new daughter that has been raised to supersede the failing oldster. We examine the colony, kill the first queen we come across, and introduce a caged queen who will be killed by the remaining queen.

In introducing the unconfined queen, she can protect herself and if she is better, stronger, and more virile than the other, she will win in the ensuing scramble. If she doesn't, it can not be so bad, because the survivor must be of some quality to have taken over.

In my search for the super queen, I often buy stock for testing and these I usually introduce in a nuc box that has had the queen removed almost 24 hours before. The nuc is smoked, the mailing cage is laid wireside down over the frames containing eggs. If the honey flow is satisfactory, the nuc is allowed to go along for ten days when it is checked. After this queen begins to lay, it can be introduced in a normal strength colony in the manner described above. If there is no flow, the nuc is fed sugar sirup which goes a long way toward successful queen introduction.

This queen introduction, using queen, her bees and her brood, is especially recommended when you have one of those nasty colonies that seem to defy requeening. Here again, the feeding of sugar sirup is recommended for successful introduction.

A worthwhile tip for finding the queen in this type of colony where there are lots of bees, and all so nasty that locating the old queen is usually difficult: Turn the colony around so it faces the opposite direction. Place a body of combs on the old stand, cover and allow the flying bees to congregate in these combs for a day, and examine the remainder of the colony at your leisure with fewer bees to "wallow" through, and also, you avoid a lot of stinging. After the queen has been located, and killed, the two sections may be reunited.

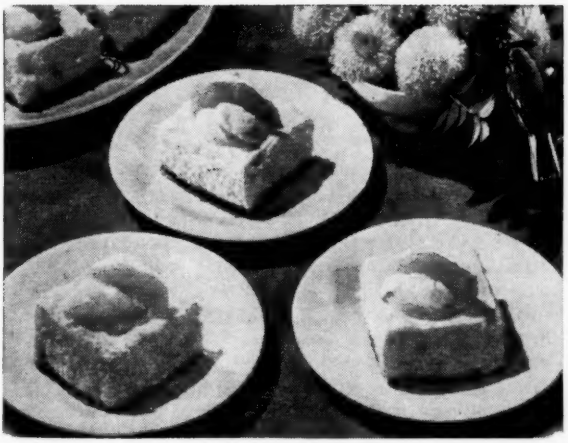
Requeening is sometimes practiced by installing a nuc with young queen on the top of a colony separated by two excluders from the lower brood chambers. This nuc was established as long as two months before the honey flow was expected. When the flow materialized, the excluders were removed and the two sections allowed to unite and work out their own salvation. When fall came, in most cases there was only one brood nest and usually the older queen had disappeared. With several of the larger and more progressive honey producers in New Jersey, this is a very popular system, since it makes for more populous colonies, and usually a bumper crop.

There are many methods of queen introduction. Every beekeeper has his own special way and most beekeepers advocate their own special way. This way is taken up by others and is passed along with added variations and the methods we learn in our youth come back to us as brand new.

Now the "distressed-queen" system (starving before introduction) comes back to me as new. Perhaps it is a good sign. Perhaps next summer I'll find a use for this system again, because it is foolproof, but it all goes to prove that in beekeeping "there is nothing absolutely new".

Honey Desserts

MRS. BENJ. NIELSEN
Aurora, Nebraska



Fluffy honey orange pudding.—Photo courtesy Kellog Company.

DO YOU have a sweet tooth? Probably everyone has to some degree! And why not satisfy it with wholesome honey-sweet desserts? Good and good for you! Honey a natural golden sweet, blends superbly with the natural fruit sugars in the toothsome desserts chosen for this month's offerings.

After a hearty dinner, for afternoon coffee, or an evening snack when friends drop in, any one of these "honeys" will prove a real boost for honey in cooking. So be prepared to furnish the recipes.

These easy-to-make treats are the kind you can make ahead of time and they prove to be splendid "keepers" even improving with a bit of aging, as the honey and fruits mingle and merge.

Fluffy Honey Orange Pudding

Four cups cornflakes, ¼ cup butter, and 2 tablespoons honey.

Crush cornflakes into fine crumbs. Blend butter and honey. Stir in cornflake crumbs; mix well. Press evenly and firmly in bottom of 8 x 8-inch pan. Chill.

One tablespoon unflavored gelatin, ¼ cup cold water, 1½ cups fresh or canned orange juice, ⅓ cup honey, ⅛ teaspoon salt, 2 tablespoons lemon juice, 2 egg whites, 4 tablespoons sugar, and 1 cup whipping cream.

Soften gelatin in cold water. Heat orange juice, honey, and salt to boiling point. Add softened gelatin, stirring until dissolved. Cool until mixture is thick and sirupy. Fold in lemon juice. Beat egg whites until stiff but not dry; beat in sugar, a small amount at a time. Fold into fruit mixture. Whip cream until stiff. Reserve a small amount of whipped cream for garnish; fold remaining whipped cream into fruit mixture. Spread in pan over crumb crust. Chill until firm. Cut in squares to serve. Garnish with reserved whipped cream. Yield: 9 servings.

Pineapple Honey Nut Mold

One cup pineapple juice, 1 tablespoon unflavored gelatin, a 1 lb. 4½-oz. can crushed pineapple, about 5 tablespoons lemon juice, 3 tablespoons honey, ¼ teaspoon grated lemon peel, dash of salt, 1 package (3-oz.) cream cheese, 1 cup pitted dates, quartered, and ⅓ cup broken nutmeats.

Soften gelatin in one-half cup pineapple juice; dissolve over hot water. Mix with remaining pineapple juice, crushed pineapple, lemon juice, and honey. Arrange a few date pieces in bottom of quart mold. Cover with one cup of the pineapple mixture; chill until set. Blend peel, salt, and cream cheese; gradually add remaining pineapple mixture; stir in dates and nuts. Pour into mold and chill until firm. Unmold; serve with honey-sweetened whipped cream. Serves 10 to 12.

Honey Apricot Tapioca

One cup water, ¼ cup honey, ¼ teaspoon salt, ¼ cup quick-cooking tapioca, ½ cup cooked apricot pulp, and 1 tablespoon lemon juice.

Combine water, honey, salt, and minute tapioca. Cook over medium heat until mixture is transparent, stirring frequently. Remove from heat. When cool, add apricot pulp and lemon juice. Serve with cream. Serves four.

Let's Talk about Honey Plants

HARVEY B. LOVELL,
University of Louisville

Horsemint (**Monarda punctata**). An important honey plant in the southwest is a very fragrant member of the mint family known as horsemint. It has pale circular clusters of yellow flowers spotted with purple. A circle of leafy bracts beneath each cluster of flowers vary in color from white to purple. Although this species of horsemint is native to an area from Wisconsin and Minnesota south to Florida and Texas, it is only in the southern part of its range that it is abundant enough to become of interest to beekeepers.

Texas. Here it blooms in early June and into July. Horsemint is one of the prolific honey plants of the state, and the honey is white or very light amber, but has such a strong minty flavor that it is unpopular with the big packers because its flavor dominates in blends. Surpluses from 20 to 100 pounds are common with tops for a strong colony of around 200 pounds. At the home of Howard Weaver of Navasota, we were served fresh horsemint honey. It had an extremely strong minty flavor and odor which we found very interesting. Mr. Weaver packs the honey separately and sells it under its floral name. Later we found his honey for sale hundreds of miles away at Plainview in the Texas panhandle. According to H. B. Parks, horsemint honey sometimes ferments and blows the caps from sealed honey but this does not occur if the weather is dry and the honey is thoroughly ripened. Luckily the honey is usually very dry in Texas.

Blackland horsemint (**Monarda citriodora**) is a very similar species but with the flowers without dots on the corolla. As the name implies this mint grows on blackland and also in the more fertile valleys, whereas sandyland horsemint grows on dry barren hillsides.

Oklahoma. According to V. K. Mc Master of Duncan, both kinds of horsemint are important in his state with the blackland mint confined to the southeastern part and the sandyland one occurring in sandy locations everywhere. Claude Bixler, Hydro, writes me that his bees sometimes store as much as 150 pounds of horsemint honey, but his average is nearer 40.

Sandy-land horsemint and black-land horsemint.

Florida. Orren Davis of Gainesville wrote that he has one horsemint location which may average 20 pounds per colony in August.

Nebraska. Charles Cavert of Bayard obtained a surplus of from 50 to 100 pounds per colony on sandy soils in 1945 during the most intense flow known to his region. The flow usually lasts for about two weeks (**A.B.J.**, Feb. 1946).

Indiana. Farther east Will A. Horst of Crown Point writes, "One year we had a flow from horsemint at South Gary so heavy that we had some hives become plugged with honey within ten days. Some hives stored over 100 pounds, but this has never been repeated, yet horsemint seems to be about as plentiful as ever."

Other species of Monarda. There are many other related species that are sometimes visited by honeybees. Wild bergamot (**M. fistulosa**), a tall herb with beautiful clusters of blue flowers, is

(Continued on page 376)

Eastern Apicultural Society

First Annual Meeting
Univ. of Rhode Island, Kingston, R. I.

July 13 - 15, 1956

Friday, July 13

A.M.
10:00 Call to order
Invocation
Welcome to R. I. State Officials
Welcome to University of R. I., President Carl Woodward
President's Address, J. Gaston Levitre
Keynote Speech: Jas. I. Hambleton, Head, Beekeeping and Insect Pathology Section, Beltsville, Md.
"Chinese Evodia Honey Tree" Fred Schwalbel, Curator Langstroth Arboretum, Philadelphia, Penna.
"Nosema and Its Control"., Dr. Howard E. Cmejla, Parasitologist, Abbott Laboratories, Chicago, Ill.

P.M.
1:30 "The Law Pertaining to The Honeybee", Mr. A. K. Blanchard, prominent lawyer and successful beekeeper, Aldie, Virginia.

2.00 Panel Discussion: "Problems of the Suburban Beekeeper", Robert Greiling, Long Island, N. Y., Moderator; Al Baptiste, Concord, Mass.; Edgar Blake, Woodbridge, Conn.; Milton Stricker, Annandale, N. J.

2:30 "Beekeepers As I Know Them", Prof. George Abrams, Apiculturist Apiculture Department, University of Maryland, College Park, Md.

3:00 "Productive Queens", Charles Mraz, Middlebury, Vermont

3:30 "Colony Morale", Prof. Edwin J. Anderson, Apiculturist. Dept. of Zoology & Entomology, Pennsylvania State University.

4:00 Advance Subjects: Wax rendering, etc., John Buchanan, Sales Manager, A. I. Root Co., Medina, Ohio

7:30 to 11:30 Square and modern dancing

Saturday, July 14

A.M.
8:00 Special groups breakfast meeting
Francis Gravely, Chair., Suppplies
William Clark, Chair., Extension
Paul Holcombe. Chair., Apiary Insp.

9:30 Reports of special groups, supplies, extension, and inspection
"Uses of Honey in Cooking", U.R.I. Home Economist
Outdoor activities in bee yard, under direction of William Clark, Extension Apiarist, Pennsylvania State University, Prof. Edwin J. Anderson, Prof. George Abrams, 4-H Program: Thomas Hines, Ky. 4-H State Beekeeping Champion, Morgantown, Ky.

P.M.
130 "Biochemistry of the Honeybee', Dr Calvin Lang, of Connecticut

2:00 "Let's Talk about Honey Plants", Prof. Harvey B. Lovell, Dept. of Biology, Louisville, Ky.

2:30 Panel Discussion: "Bees and Flowers", Rev. Carl Webb, Glastonbury, Conn.
Bees — Dr. Mary I. Bunting, PHD, Chairman, Dean of Douglas College, Rutgers, the State Univ. of N. J., Beekeeper and Microbiologist teacher.
Mrs. Louise Yates, Hartford, Conn. Beekeeper, Lecturer, World Trav.
Flowers — Mrs. Allan Davenport R. I. Federation of Garden Clubs
Mrs. Adelina G. Simmons, Connecticut Fed. of Garden Clubs
Mrs. Lucien B. Taylor, Massachusetts Fed. of Garden Clubs

3:45 Tea — by the ladies

4:00 Business Meeting

8:00 Banquet: Speaker, Commander Alfred G. Brown, Atlantic Reserve Fleet
Roy Stadel's "Waltzing Doll"
Von Frisch's original film "Behavior of the Honeybees"

Sunday, July 15

Forenoon: Church Services
Tour of University Campus

Exhibits:
Gadget Exhibit, Alymer Jones, Malden, Mass. Chairman
All the Ben Franklins of the World are invited to bring along their pet gadget for display

Approximate Cost: (Rooms, husband and wife accomodations)

Registration	$ 3.00
Room: Friday and Saturday	4.00
Banquet Ticket	2.05
Meals less than a dollar per Suppose - 3 meals Fri. 2 meals Sat., and 2 meals Sun. Total of meals max.	7.00
Add $2.00 if you register Thurs.	2.00
TOTAL	$18.05

Where can you buy a cheaper vacation weekend plus all bee knowledge and pleasure derived from your visit to Rhode Island?

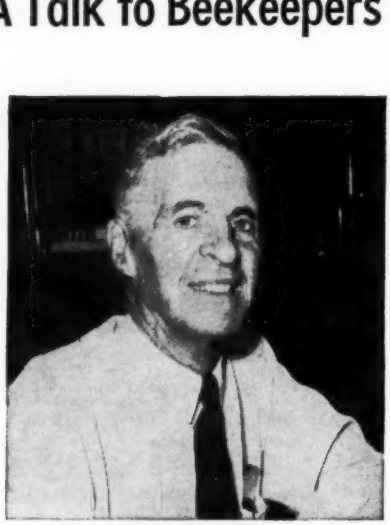
Kingston, Rhode Island is located on the NYNH&H Railroad route out of New York and Boston. All Pennsylvania trains out of both Pennsylvania Station, New York and South Station Boston stop at Kingston. Taxi and Bus service is available out of Kingston Station.

JUST NEWS

Sioux Honey Association has taken over the Bogenshutz uncapping machine. They have purchased the complete Bogenshutz stock from the Engleberg-Huller Company of Syracuse, N. Y. Sioux Honey Association and its members have been working on improvements that will be incorported into this machine. They will carry a complete line of parts for the present users. The machine will be manufactured in Sioux City, Sioux, Iowa.

A Talk to Beekeepers

by M. J. Deyell



Jack Deyell

IN MY May talk I mentioned seeing two queens in a hive, a four-and-a-half-year-old queen, and supposedly, her daughter. Within the past week I checked through this hive again but did not find either of the queens, but did find eggs and larvae. I will likely find one of the queens, or both, in the near future. I'm interested to learn how long the old queen lives.

A Late Spring

We appear to be about two weeks behind in weather conditions. Last spring was very early, but this year, bees have not been able to collect much pollen and brood rearing has slowed up considerably. So long as there is old pollen and honey in the combs, brood rearing will continue but there is nothing like fresh pollen to stimulate it.

Importance of Pollen

Today, May 7, I saw bees carrying pollen at a temperature of 50 degrees F. This seems quite unusual. Just how they can collect pollen at this low temperature, I'm unable to understand. Those of you who are interested to know just how bees pack pollen into the corbicula, should read the book, "The Pollen Load of the Honeybee", by Dorothy Hodges. This came out in January 1952 and can be obtained from Bee Research Association, 10 Barnett Wood Lane, Ashtead, Surrey, England. The price is $3.00. This process of collecting and packing of pollen on the bees' legs is complicated, to say the least.

Dr. C. G. Butler, head of the Bee Research Dept., Rothamstead Experiment Station, England, in his late book, "The Honeybee", quotes Todd as stating that 10 average size pollen loads are required to produce one worker bee and one pound of pollen is necessary to produce four to five thousand bees. Since approximately 200,000 bees are reared by a strong colony in the course of a year, this would require about 44 pounds of pollen for the colony. Something like 2,000,000 loads of pollen are required to supply the needs of the average colony for one year.

After attempting to comprehend the foregoing, we begin to realize how important pollen is in the bee hive. In areas where there is a scarcity of pollen, or, where early frosts have destroyed the bloom from which pollen is collected, it is necessary to feed a pollen substitute or supplement to enable bees to continue brood rearing.

A Marvelous Balance in Nature

There is, indeed, a marvelous balance in nature if man does not upset it. A swarm of bees in a tree or the siding of a building, during a favorable honey season, will store a goodly supply of honey, also pollen for future use. The pollen is stored adjacent to the brood-rearing area of the combs and the cells are about half-filled with pollen. As the last brood emerges in the fall, some late-gathered honey is likely to be stored on top of the pollen. This honey protects the pollen during the winter. In the spring, as the bees consume the honey covering the pollen, it becomes available to the bees. This usually is a life saver for the bees, especially during cold spells of weather in the spring when bees are unable to fly out after fresh pollen. And thus, brood rearing will continue during the early spring even though bees are unable to fly out after fresh pollen. When

man has control of the bees, he is likely to overlook the necessity of an abundance of pollen and perhaps will not permit the bees to store a normal amount in the combs during the fall months because of his faulty hive manipulation.

Some beekeepers may take a notion, late in the fall, to rearrange the combs in the brood chamber and perhaps remove some combs containing pollen from the brood chamber. In some instances, this results in the loss of the colony. If we would let the brood chambers strictly alone in the late summer and fall, so far as exchanging or removing combs is concerned, we would be better off the following spring.

Losing Tons of Honey

When we come to see how it is possible during a favorable honey season to secure good crops of honey, with good bees and intelligent apiary management, we begin to realize how many tons of honey, perhaps carloads, are lost throughout the country during the season.

About 15 years ago, when we kept bees commercially in western Ohio, one day I was looking for a suitable apiary location and noticed some bees (about 25 hives) beside a dwelling house near the side of the road. I decided to call on the beekeeper. He was in an exceptionally good beekeeping location with an abundance of clovers around him. He was producing comb honey, or trying to. When I asked him about the crops he secured he said that he usually got one shallow super of honey but one year he had to put on the second super. I knew he was in an excellent location. I had a commercial apiary about five miles from him with hives piled high with supers, some colonies with over 200 pounds surplus. This beekeeper could have been producing four or five times the amount of honey he secured had he known how to manage his bees.

Having Hives Boiling Over with Bees at the Right Time

It seems apparent that some beekeepers do not know the difference between a real honest-to-goodness colony boiling over with bees and an ordinary colony of mediocre strength. It is the populous colonies that pile up the surplus honey. Bees wear out rapidly during the honey flow, therefore it is necessary that there be an abundance of young bees in the colony to gradually take the place of the old ones that die.

It is necessary to have a large percentage of bees of the honey-gathering age at the time the main honey flow starts. Twenty-one days are required from the egg to the young emerging bee. Two weeks more are required for this young bee to become a field bee. This makes five weeks from the time an egg is laid until it results in a field bee ready to help store the honey crop.

In this area the main honey flow usually starts about the middle of June. This being the case, it is very necessary that heavy brood rearing occurs during May or early June in order to have bees of the proper age to go out after the honey.

Keeping Ahead of the Bees

This is very important. Sometimes we fail to put on supers in time and the colonies become congested and start building queen cells and eventually will swarm unless some measures are taken to forestall swarming.

It does no harm to put on supers containing drawn combs a little ahead of the time they are actually needed. The bees will get in the habit of going up into these supers, even though very little is coming in. When the flow does break, the bees will then begin working in the supers immediately.

In this connection, it should be mentioned that putting on supers containing frames with full sheets of foundation too early, or during a dearth of nectar, is a mistake, because the bees may gnaw holes in the full sheets of foundation. However, putting on supers containing drawn combs just prior to the beginning of the main flow is perfectly in order.

Top Supering

This means putting the new super on top of the super or supers already partly filled. We have practiced this for a number of years and find it quite satisfactory, especially during a good honey flow. This method saves an enormous amount of work in lifting filled and partly filled supers on and off the hives. Let us suppose the hive already has one or two supers on and

another is needed. The old method of placing the new one at the bottom of the pile directly above the queen excluder, below the filled and partly filled supers, involves an enormous amount of work. These supers must be lifted off, then lifted back on. If you estimate the weight you lift during this operation, you will be surprised. For example, assuming the supers already on contain 50 pounds of honey, in a 50-colony yard handling these twice in order to place the new supers at the bottom of the piles, you would be lifting over 5,000 pounds. **We should use our heads to save our backs!**

Lighting a Smoker

I meet beekeepers who say they cannot keep their smoker lighted. Possibly the reason is that they do not light it properly in the first place. It seems necessary to use the right kind of fuel. There are many different kinds. I have tried most of them. At present, we use old burlap sacks rolled up into the diameter of a smoker barrel, then cut into proper lengths with an axe to almost fill the smoker. We do not roll the burlap too tight. It is an advantage to light a piece of paper, place it in the bottom of the smoker barrel, then after it is going well, take the roll of burlap and let it down into the smoker, working the smoker bellows until the burlap starts to burn freely. Be sure the smoker fuel is well lighted before starting to work the bees. Sometimes a smoker is set aside long enough for the fuel to die out. It is then necessary to light the smoker again. It pays to have a good smoker and good fuel properly lighted.

I used to hold the smoker between my knees while handling combs. Occasionally I would burn holes in my coveralls and perhaps scorch my knees. I now hang the smoker on one end of the hive by a small hook provided for that purpose.

Don't Let Bees Starve

June is a rather treacherous month for bees, especially in the clover regions of the North. Even though colonies appear to have an adequate amount of stores in late May or early June, honey disappears rapidly during heavy brood rearing. In some areas there is a light honey flow between the fruit bloom and clover flows. In other areas, bees make a scant living and if a spell of cool rainy weather comes, some colonies may starve. Some years ago we had a few very populous colonies that starved early in June. Some clover was in bloom but it had not begun secreting nectar.

Boy ready to capture a big swarm in a basket.—Photo by Frank Buckley, Bristol, England.

During a cool rainy spell prior to the major honey flow, commercial beekeepers with out-yards can avert starvation by hefting the end of each hive and feeding granulated sugar to any colonies that feel light. An inner cover will hold almost three pounds of sugar which is the equivalent of a five-pound pail of thick sugar sirup. The center block of the inner cover is removed to permit the bees to reach the sugar and I know from experience that they will go after it—if they need it.

The novice beekeeper with only a few hives can easily examine his colonies to see if feeding is necessary, even though the weather is cool.

WE URGE our friends to read the article, "Kinds of Bees" by George E. Bohart and W. P. Nye that appears in this issue. It is the second in a series of articles about the role of honeybees in the world of insects. The pictures are outstanding and the material is written so everyone can understand it.

Just News

The **Middlesex County Beekeepers' Association (Mass.)** will hold its second outdoor meeting of the season at the home and apiaries of Mr. and Mrs. Henry Neunzer, Woburn Street, Andover, Mass. Henry is our hard-working Association president, and we look forward to having our first meeting at their new location in Andover. The meeting will be held on Saturday, June 30, at 2:00 P.M.—L. C. Proctor, Sec.

The **Midwestern Beekeepers' Association** will meet Sunday, June 10th, at Glenn Borchardt, Jr., 5401 Newton, Mission, Kansas at 2:30 p.m. (One block west and six blocks north of Shawnee-Mission High School). Program under discussion will be Production: Section honey; Cut comb honey; and Extracted honey by Mr. H. J. Schaeffer. Drawing prize and refreshments. All welcome who are interested in beekeeping. — Mrs. William Brite, Secretary.

The **Westchester County (New York) Beekeepers' Association** will hold its first outdoor meeting on Sunday, June 17th at the **summer cottage** of Mr. and Mrs. Eugene L. Morrison, at Bethel, Sullivan County, New York. All members and visitors are urged to bring their picnic lunch. Coffee and soft drinks will be furnished by the association. There will also be several portable fireplaces, if anyone wants to make use of them.—Mrs. Alfred Roth, Publicity.

The **Connecticut Beekeepers' Association** summer meeting will be held June 23, 10 a.m., 1956. at Ed Labrake's, Bradley Heights, Woodbridge, Conn. and the speaker will be Paul L. Holcombe of New Jersey. His talk will be on general beekeeping. Plans for the exhibit at the R. I. meeting of the E. A. S. will be discussed. Lunch will be pot-luck with coffee furnished. Beginners in beekeeping and out-of-state visiting beekeepers are welcome.

At the recent April meeting of the association the following officers were elected: President, Chester Niles, 35 New Rd., Mt. Carmel, Conn.; Sec., Miss Lois Baker, Brooklyn, Conn.; Treas., Edwin LaBrake, Woodbridge, Conn.; Chairman of Pub., P. J. Hewitt, Jr., Litchfield, Conn. Pres. of Ladies Aux., Mrs. M. Louise Yates, 15 Chapman St., Hartford, Conn.—Philemon J. Hewitt, Jr., Chairman of Publicity.

The **Lake County Beekeepers' Association of Indiana,** at their meeting on April 12 elected officers as follows: Mrs. Robert M. Black, Lowell, Indiana, President; Will Horst, Vice President; and Tom Taylor, Lovell, Secretary-Treasurer.

Who's Who in Apiculture. The new president of the Connecticut Beekeepers' Association is Chester Niles, 53 New Rd., Mt. Carnel, Connecticut.

The **Pennsylvania State University** will hold a beekeeping short course August 13 to 17. Any interested adult may enroll by writing to the Director of Short Courses, College of Agriculture, University Park, Pa. Some subjects to be discussed are: Starting Beekeeping, Spring Management, Swarm Control, Requeening, Queen Rearing, Bee Diseases, and Marketing. More details will appear in a future issue.

The **Worcester County Bee Association** will hold its second outdoor meeting at the home of Mr. and Mrs. Chester Roaf, 2nd New Village, Manchaug, Mass. After our business meeting we will enjoy a picnic supper, please bring chairs and table. Coffee will be served. A cordial invitation is extended to all beekeepers. — A. W. Rozenas, Publicity Chairman.

The **Ohio State Beekeepers' summer meeting** will be held in Medina, July 21 and 22, at Hale's Hall in the Fair Grounds. Host organizations are Medina, Erie, Cuyahoga, and Lorain County Associations. Dean L. Rum-

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mell of Ohio College of Agriculture, Ohio State University, will be the guest speaker. A banquet will occur the evening of July 21. The program will consist of talks, movies, demonstrations, and panel discussions. Details of the program will appear in the July Gleanings.

Charles P. Cornell one of the most active Presidents of the R. I. Beekeepers' Association and Country Gentleman farmer passed away during the month of April. Old time Rhode Island beekeepers will remember well the good times and interesting beekeeping meetings held at Mr. Cornell's residence in Buttonwoods. For a time Mr. Cornell was actively engaged in queen rearing and the queen-rearing apiaries were under the supervision of Howard A. Pike, Apiary Inspector for Rhode Island. Mr. Cornell maintained a clothing store on South Main Street in the Providence area for a number of years and kept colonies of bees in the back room of the store and the bees could be seen flying in and out the window. Many old time Rhode Island beekeepers will remember the cracker barrel sessions at the Cornell Store.

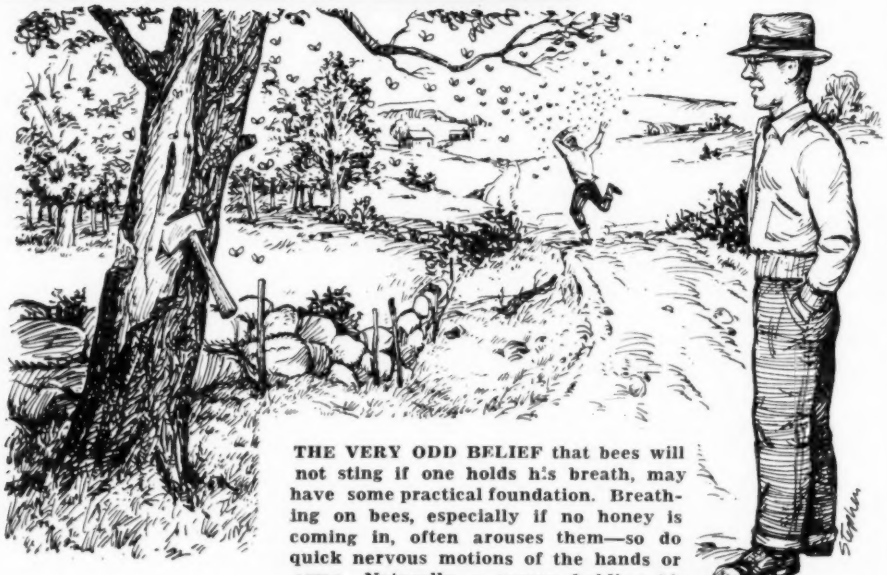
The **Tri-State mid-summer beekeepers' meeting** will be held in Sioux City on July 7th. Sioux Honey Association will be hosts.

Cover Picture

Edwinna Earp of brooksville, Maryland, holds a colony of stingless bees from Brazil belonging to the genus Trigona. The lid of the hive has been opened to show the general construction of the nest and the size of the colony. The bees in question are slightly smaller than house flies and are excellent pollinators; however, they store only enough honey for their own needs.—A USDA photo by Forsythe.

Bee Lore

Illustrated by V. R. Stephen



THE VERY ODD BELIEF that bees will not sting if one holds his breath, may have some practical foundation. Breathing on bees, especially if no honey is coming in, often arouses them—so do quick nervous motions of the hands or arms. Naturally, a person holding his breath is not very active.

Buy and Sell

Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate: 18c per counted word, each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it), count as one word. Copy should be in by the 10th of the month preceding publication.

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WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. The Hubbard Apiaries, Onsted, Michigan.

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HONEY FOR SALE, can or truckload. Lloyd E. Allen, Tipton, Michigan.

CLOVER extracted honey in sixties. Abram Brubaker, Rt. 2, Lancaster, Pa.

MICHIGAN'S finest raspberry, basswood, clover comb honey, in 4 x 5 window cartoned sections. Extra fancy, $8.00; Fancy, $7.00; No. 1, $6.00; No. 2, $5.00 case. Ready now for shipment. E. Z. Quick Way B Farms, Boyne Falls, Michigan.

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BEEKEEPERS TAKE NOTICE—We can not guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for cash only or on C.O.D. terms except where the buyer has thoroughly established his credit with the seller.

CASH for all types extracted honey. Send sample and best price. Buckeye Honey Co., 3930 No. High St., Columbus 14, O.

CASH FOR BEESWAX. Write as to quantity and we will quote price. Muench-Kreuzer Candle Co., Inc., Syracuse, N. Y.

WANTED—All grades of extracted honey. Send sample and price. Deer Creek Honey Farms, London, Ohio.

HONEY WANTED, all grades in 60's. Mail samples, advise quantity, best price. M. R. Cary Corp., 1112-14 East Erie Blvd., Syracuse, N. Y.

HONEY WANTED — All grades and varieties. Highest cash prices paid. Mail samples. State quantity. HAMILTON & CAMPANY, 2613 South Yates Ave., Los Angeles 22, California.

WANTED — White extracted or comb honey. Send sample. Millersport Honey Company, Millersport, Ohio.

BEESWAX WANTED — Highest prices paid in cash or trade for bee supplies. The A. I. Root Company, Medina, Ohio; Council Bluffs, Iowa, San Antonio, Texas.

BEST CASH DEAL for your honey (any grade) and beeswax. Alexander Company, 819 Reynolds Road, Toledo, Ohio.

WANTED, chunk comb and extracted honey. Mail sample and prices. Stoller Honey Farms, Latty, Ohio.

WANTED: Light amber clover and fall-flowers honey, no buckwheat. Also white clover. Send sample and lowest price. Cloverdale Honey Co., Fredonia, N. Y.

WANTED—Honey in sixty-pound cans, also beeswax, any quantity. L. E. Allen, Tipton, Mich.

WRITE FOR Shipping tags and quotations on rendered beeswax. We buy from one pound up and if you have over 25 pounds let us work it into foundation for you at a 25 per cent saving. Walter T. Kelley Co., Clarkson, Kentucky.

CASH for Amber and Buckwheat Honey. Best cash price for wax. Hubbard, Onsted, Michigan.

WANTED—Buckwheat and some amber honey. Eastern Food Products, 421 Bedford Ave., Brooklyn, N. Y.

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WRITE FOR CATALOG — Quality Bee Supplies at factory prices. Prompt shipment. Satisfaction guaranteed. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies and Comb Foundation. Onsted, Michigan.

THE BIGGEST BEE SUPPLY Catalog published (64 pages) free for the asking. Listing many items not found in other catalogs. No agents—buy direct and save 20%. WALTER T. KELLEY CO., CLARKSON, KENTUCKY.

FOR SALE — New heart cypress 10-frame bottom boards. KD., 10 or more, $1.00 each; 50 or more, 90 cents each; 100 or more, 85 cents each. One nailed up sample postpaid. $1.25. Fred L. Poole, Elizabethtown, Rt. 2, Box 67, No. Car.

FOR SALE — 8-frame Root equipment for 700-colony apiary. Write for details to E. H. Wadleigh, Monte Vista, Colo.

FOR SALE — Several thousand once-used 60-lb. cans. 30c each; also 1500 more than once-used cans, 20c. F.O.B., River Rouge, Honeymoon Products Co., 39 East Henry St., River Rouge, Michigan.

QUEENBEE PAINTING OUTFITS, $1.50 postpaid. Southwick Apiaries. Waban, Massachusetts.

FOR SALE—Good new and used 10-frame equipment, two large tanks. Ray Wilcox, Odessa, N. Y.

Three-frame not reversible, honey extractor, $13.00; 4-frame, $18.00, fine shape. Fred Peterson, Alden, Iowa.

FOR SALE — 225 comb honey supers, plain 4¼ x 4¼ x 1½". Very good condition. $1.00 each. Wilson Mitchell, Boyne Falls, Michigan.

FOR SALE—8-gal. steam boiler, Brand Senior Cappings melter, Root 2-frame reversible extractor, steam knife, 15 Woodman extractor, comb savers, 40 Modified Dadant bottoms and covers, Neises 2-basket strainer. Norman Roos, Hawley, Minn.

FOR SALE—One used small extractor; one used large extractor. Hubbard Apiaries, Onsted, Michigan.

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CAUCASIANS—Young laying queens for rest of season, $1.00 each. Good working, hardy gentle bees. Queens personally raised. Fred Brock, McDonald, Tenn.

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FOR SALE—100 colonies in 10-frame standard equipment located in Northwest Iowa. Write XW, care Cleanings in Bee Culture, Medina, Ohio.

FOR SALE—100 colonies of Italian bees, A-1, and equipment, $10.00 each. Tolbert Turner, Box 46, Saginaw, Texas. Phone: MA 48507.

FOR SALE — 100 colonies, two stories, 300 extracting supers. George Simon, Rt. 3, Chillicothe, Ohio.

Will fill your cages with booster bees for 65 cents pound after May 15. Valdosta Honey Co., Valdosta, Ga.

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MISCELLANEOUS

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FOR SALE—Royal Jelly and The Little Queen Royal Jelly Extractor. Royal Jelly Enterprises, 1017 Los Carneros Avenue, Napa, California.

WANTED—Cash paid for a large outfit of bees in the midwest, standard 10-frame size preferred. Send all information in first letter. Box 224, Gleanings, Medina, O.

WANT 45 or 50 frame radial extractor. Lewis Konces, No. Abington, Mass.

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WANTED—A good reliable man for a few months, or a permanent position for the right man. Weaver Apiaries, Navasota, Texas.

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BEE WORLD, the international journal of the Bee Research Association, published monthly, contains the latest research reports on bees and beekeeping. With **Apicultural Abstracts** it costs $3.00 per annum. Apicultural Abstracts only $1.75 per annum from the Hon. Subscription Secretary, Bee Research Association, 10 Barnett Wood Lane, ASHTEAD, Surrey, England.

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All packages F.O.B. Jesup.

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Reared under most ideal conditions from stocks with scientifically tested breeding background. Work done by men who have grown up in the business and devoted to the bees as a life profession. Join the host of progressive, alert honey producers who know the worth of good queens; with uniformity year after year.

Reg. U.S. Pat. Off.

"THE BITTERNESS OF POOR QUALITY LINGERS LONG AFTER THE SWEETNESS OF CHEAP PRICE IS FORGOTTEN."

	"Starline" Dadant 4-Way Hybrid Queens	"Magnolia State" Italian Queens
1-24	$1.40	$1.20
25-99	1.30	1.10
100-up	1.20	1.00

Clipped and Marked FREE. Air mailed where expedient. Live delivery guaranteed, also satisfactory performance after safe introduction.

JENSEN'S APIARIES **MACON, MISS.** **U.S.A.**

"The Business QUALITY Built"

WILBANK'S
QUEENS "ITALIANS" QUEENS

For your summer and fall requeening we offer you an outstanding Strain of Three Band Italians and can furnish select young laying Queens promptly on receipt of your order.

Prices

1-24	$ .85 each
25-up	.75 each
Tested Queens	1.50 each

Queens clipped and/or painted on request. Shipped prepaid Air Mail.
Quality Does Not Cost — It Pays

THE WILBANKS APIARIES **Claxton, Georgia**

QUEENS
By Air Mail

1 to 25 ..... 85c each
26 up ..... 75c each

Phone No. 466 R5

O. K. Anderson & Son

Coffee Springs, Alabama
Post Office Box 193

The Yankee Strain — $1.00 each
The Best Queens for Honey Production
23 Years of Breeding
The Stricker Apiaries
Annandale, N. J.

WHEN TO GIVE MORE ROOM

(Continued from page 355)

early September flow.

It might be repeated here that two-queen and other systems can give better results to an experienced beekeeper but I feel that the poor, distracted individual who is not ready to figure out the complicated systems can be assured that he can get a crop with fairly simple methods.

SUE BEE SAYS:

ARE YOU LOSING HONEY BECAUSE YOU ARE SHORT OF EXTRA EQUIPMENT?

Compare our prices with what you have been paying

Standard Brood Frames	$ 12.25 per 100
Standard Hive Bodies	9.25 per 5
5 11/16" Supers empty	5.95 per 5
6 5/8" Supers empty	6.95 per 5
Folding Bee Veils	1.50 each
Canvas Bee Gloves	1.65 pair
30-Frame Extractor	190.00
Pierce Elec. Uncap. Knife w/control box	14.50
Rosedale Uncapping Plane	15.00
1 1/4" Honey Pump	58.75
Sr. Brand Capping Melter (galvanized)	123.75
Woodman Power Uncapping Knife	90.00
Two-stem Steam Knife	7.75
1 Pound Cyanogas (Not mailable)	1.00
5 Pound Carbolic Acid (Not mailable)	4.75
1 Pound Carbolic Acid (Not mailable)	1.65
Electric Super Elevator	200.00
Bogenshutz Uncapping Machine (Stainless Steel)	1595.00
Bogenshutz Uncapping Machine	1450.00

Bee sure to save your burr combs and cappings to be rendered. We recommend that you put the cappings in leak-proof containers. Leakage spoils the profit. Send your cappings into us early for prompt service.

SUE BEE FOUNDATION IS AVAILABLE FOR QUICK DELIVERY to take advantage of a rapid honey flow.

SIOUX HONEY ASSOCIATION
SIOUX CITY, IOWA

Bee Supply Departments are Located at the Following Plants:
Sioux City, Iowa Lima, Ohio Anaheim, California
Rogers, Texas Waycross, Georgia

XUM

LET'S TALK ABOUT HONEY PLANTS

(Continued from page 364)

widely distributed in the eastern states, but has the flower tube so long that it is visited chiefly by bumblebees and butterflies. According to Melvin Pellett the nectar is sometimes so abundant that it fills the tube to a point where honeybees can reach part of it.

Colorado. Mr. Cecil Mount of La Jara writes that sunflower produces a dark, strong honey from August 1 to September 10 but that he uses this honey as winter feed for his bees. His main crop comes from yellow sweet clover and alfalfa. "We do not get very much alfalfa honey now, since most of it is cut for hay before it blooms."

Ontario. Mr. O. W. Krouser writes me from Guelph that he operated 1200 colonies until 1952 but due to the decline in the size of the crop he is gradually cutting down his apiaries each season, until his beekeeping can become a one-man operation. He adds, "I blame this decline on many things but above all is the lack of sufficient plantings of nectar-producing pasture and hay crops. Added to this is the practice of cutting the hay when the bloom on the clover just starts to show and with modern machinery this takes but a fraction of the time taken years ago".

WANTED

Wish to purchase 100 to 400 hives northern or central New York on location with or without equipment. Robert F. Bickford, 2860 Westgate Ave., West Palm Beach, Fla.

BEEKEEPERS — A new source of income. See Royal Jelly Ad on page 324.

OVERSTOCKING

(Continued from page 340)

asked is, is it necessary to have overstocking or crowded conditions anyway? I have traveled quite extensively in this country and my answer is an unqualified "No, it is not necessary". There are enough good to fair locations for everyone and probably the number of bees in this country could be increased 50 per cent and still not be crowded if locations could be picked correctly. There are some localities where beekeepers give the impression they are crowded but in most of these places a bird's-eye view of the territory would show large gaps where there are no bees. In spite of my own failure I still think the map idea, showing all existing apiaries in an area, is a good one, and might prevent the ambitious newcomer from plunking a few hundred colonies down a quarter of a mile from some established yard.

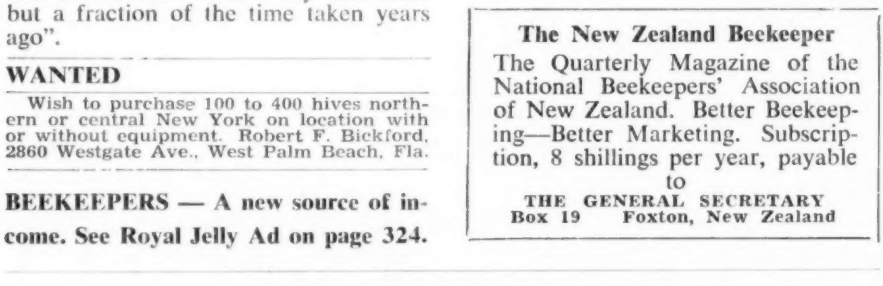
Overstocking may be stated simply enough as the keeping of so many bees in an area that they cannot possibly succeed. I do not think that the solution is in Mr. Stobie's arithmetic but in experience, intelligence, and cooperation and there is little doubt but what at times cooperation is the most difficult of these three factors to obtain.

The New Zealand Beekeeper

The Quarterly Magazine of the National Beekeepers' Association of New Zealand. Better Beekeeping—Better Marketing. Subscription, 8 shillings per year, payable to

THE GENERAL SECRETARY
Box 19 Foxton, New Zealand

Answers to Label Quiz on page 341



Here's how the labels would look on the jars:
A-1, B-2, C-4, D-3, E-5, and F-6.
How many did you get right?

KINDS OF BEES

(Continued from page 333)

row in the soil. They range from the smallest of bees to large furry insects the size of bumblebees (Fig. 5). They have long tongues, relatively slender mandibles, and brushlike hind legs for carrying pollen. The last feature is not found on the numerous parasitic forms that have arisen in this family. The parasitic species in such genera as **Nomada** (Fig. 5) (parasites of **Andrena**) and **Triepeolus** (Fig. 5) (parasites of **Melissodes**) have mostly short, scalelike hairs and conspicuous red and black and yellow or black and white patterns. Most people think of them as wasps instead of bees.

The social bees (family Apidae) are largely restricted to tropical and subtropical areas. Bumblebees (Fig. 6) and their parasitic cousins in the genus **Psithyrus** are the only truly cold-hardy bees in the outfit. The common honeybee (Fig. 6), like man, can live in cold climates because it has learned to control its environment. Alone and unprotected neither man nor his friend the honeybee can long survive freezing temperatures. You can easily recognize members of this family by the shining pollen baskets on the hind legs.

The stingless bees (Fig. 6) comprise the largest group of the Apidae. Most of them are found in the New World, but tropical areas in the Old World possess a few species of the single genus **Trigona.** Some stingless bee colonies compare in size with those of the common honeybee. In the heyday of the Mayas and Aztecs of Mexico, stingless beekeeping was an important industry.

The honeybees (genus **Apis**) were confined to the Old World until white men brought the common honeybee (**Apis mellifera**) to North America. The other two or three species of **Apis** are still found in the continents of Africa and Asia. **Apis indica,** which is often considered as a subspecies of **A. mellifera,** is kept in hives in India and China but its yields are generally smaller than those of typical **A. mellifera.**

The most primitive of the Apidae are the large and beautifully colored tropical American bees of the genera **Euglossa** and **Eulaema** (Fig. 6). Although their tongues and pollen baskets show a high state of development, they are "socially retarded". Their only claim to social life is in the use of common entrances for separate nests grouped closely together.

Logan, Utah.

Queens! Queens!

Now that the package rush is over, we are in position to offer queens.

Requeen or make increase with either Island Hybrids or Rossman Regular Italians. You cannot go wrong with either.

	Island Hybrid	Regular Italians
1-25	$1.35	$1.15
26-99	1.25	1.00
100-up	1.15	.90

We can still supply Package Bees.

"They Produce"

Rossman Apiaries

P.O. Box 133 Moultrie, Ga.

QUEENS 75c

Bright 3-Band Italians

Untested Queens .....$ .75 each
Tested Queens ..... 1.50 each
3-lb. Pkg. with Queen .... 4.50 each

Safe arrival and satisfaction guaranteed.

JOHN A. NORMAN
Rt. 1 Grady, Ala.

OLDEST BEE JOURNAL IN THE ENGLISH LANGUAGE

Keep up on markets, practices, scientific data, regulations and plant possibilities.

1 year, $2.00, U. S. and Canada
Foreign postage, 50c a year extra

AMERICAN BEE JOURNAL
Hamilton, Illinois

BEEKEEPERS — A new source of income. See Royal Jelly Ad on page 324.

THREE-BAND and PURE THREE-WAY D. R.
ITALIAN PACKAGE BEES and QUEENS

We ship pure worker bees by mail, express, or truck. We guarantee live arrival. We ship you the package with the queen introduced or regular caged in the package, whichever you like.

1956 Prices — Each with a Young Laying Queen

Each	2-Pound	3-Pound	4-Pound	5-Pound
1 to 11	$4.00	$5.00	$6.00	$7.00
12 to 29	3.80	4.75	5.70	6.65
30 or more	3.60	4.50	5.40	6.30

Untested Queens, each, $1.35; Tested queens, each $2.00.

If queenless bees are wanted, deduct $1.35 from the package price.

JACKSON APIARIES P. O. Box 58 FUNSTON, GEORGIA U.S.A.

ITALIAN "GULF BREEZE" QUEENS

No matter what stock you are now using, it will pay you to try "GULF BREEZE" stock. Produce more with better queens.
Prices: 1-9 ..... 80c 10 or more .....75c each postpaid.

BESSONET BEE COMPANY Donaldsonville, La.

Carniolan and Caucasian

Requeen your swarms and increase with young laying queens for quick build-up. Caucasian and Carniolan are the gentlest of all races of bees, build white comb, work in cool weather and not bad to drift into other colonies. hence less liable to disease. Laying queens $1.30 each air mailed. $2.00 each to foreign countries. After June 15.

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Rt. 5, Morristown, Tenn.

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Weslaco, Texas

BRITISH BEE JOURNAL
The Only WEEKLY BEE Journal in the World
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Gleanings in Bee Culture
Medina, Ohio

QUEENS

Nice large queens .....65c each
Send us your order of 1 or 1000

MITCHELL'S APIARIES
Bunkie, La.

FROM FOREIGN LANDS

(Continued from page 358)

gauze may be soaked in honey and applied so as to cover the surface.

"Daily warm baths taken at the time of changing the dressing often make the patient more comfortable but do not appear to have much effect upon the progress of healing. In some cases a stage occurs in healing when with clean and healthy granulations covering the surface there still seems to be a slowing of the healing process. At this stage a short course of ultra violet light applied to the affected area will often prove helpful."

The BRITISH BEE JOURNAL is to be commended for their foresight in republishing this excellent report on the medicinal use of honey from the Middlesex (England) Hospital Journal. Space has prevented the reprinting of the complete report in this issue of Gleanings, however, the remainder will appear next month.

HARPER'S FAMOUS HIGH QUALITY

Italian Queens, air mail ..... 75c each
10 and up ..... 70c each

CARLUS T. HARPER
New Brockton, Ala.

REQUEEN? DEFINITELY

(Continued from page 330)

posed to be automatically taken care of by having abundant stores as of previous fall, a new queen as of the previous summer, and spring feeding for stimulation of brood rearing in cool, "off" seasons.

Getting back to No. 2 and the fall goldenrod, the backbone of the fall flow in New England, for instance, can begin as early as the first of September. Given this date, Sept. 1, plus the fact that development of a field bee requires six weeks from the time the egg is laid, we work back to July 15 as the very latest date by which we want a new queen actively laying. Now, if we allow just one week for introduction, release, acceptance, and getting into high egg-laying gear, we have worked back to July 8. This is **early** July and **is during** a bona-fide honey flow provided conditions are anywhere near normal. To be on the safe side, the 4th of July makes a good deadline for introduction. If a queen cell is to be given (and there is much to commend it, especially the lengthening of desirable gap in brood rearing) we get back into June.

With this chronological order of things, it will be seen that many of the remaining advantages of new queen introduction are dependent on introduction by the 4th of July. Why not make this day really an Independence Day? Independence of slothful old queens, small crops, disease, viciousness, and who knows, even independence of swarming. To quote our English friends again, "Have a go at it".

Malden, Mass.

[It would appear that the proper time for requeening depends on conditions that prevail, with respect to major and minor honey flows in various parts of the world. The question with many beekeepers seems to be, "where can I get good queens"? —Editor.]

HOWARD WEAVER'S
Personally Reared
Caucasian Queens
— Prices —
1 to 24 ..... $1.00
25 and up ..... .95
Howard Weaver
Navasota, Texas

NORMAN BROS.
QUEENS 65c
By return mail

NOW READY. Send us your rush orders. Prompt service, full weight, safe arrival, health certificate, and satisfaction.

— PRICES —

2-lb. pkg. with queen	$2.75
3-lb. pkg. with queen	3.50
Tested queens	1.00

Package bees are shipped express F.O.B. If wanted shipped parcel post, add postage.

NORMAN BROS. APIARIES
Ramer, Ala.

CAUCASIAN or ITALIAN
Package Bees and Queens for 1956

Gentle bees, less swarming, good producers, health certificate and live arrival guaranteed are just a few things you get when your requirements are sent to me. No extra charges on orders booked in advance.

	1-25	25-50	50-100
2-lb. pkg. w/q	$3.70	$3.45	$3.20
3-lb. pkg. w/q	4.60	4.30	4.00
4-lb. pkg. w/q	5.50	5.15	4.80
5-lb. pkg. w/q	6.40	6.00	5.60
Queens	1.20	1.10	1.00

FARRIS HOMAN
SHANNON, MISS.

PACKAGE BEES AND QUEENS
Three-banded Italians

	1 to 50	50 up
Queens	$1.10	$1.00
2-lb. pkg.	3.50	3.25
3-lb. pkg.	4.50	4.25

Live delivery guaranteed
AUTAUGA BEE FARM
Owned and Operated by
J. H. Moody and W. L. Strength
Prattville, Ala.

IT'S ALL IN THE QUEEN

Julius Lysne

THE MONTH of June is the month when swarming is a problem for most beekeepers here in the North. There are countless plans advanced to control swarming, but practical beemen now know that the main reason for swarming is supersedure of queens.

One beekeeper will insist he can control swarming by cutting queen cells every week or ten days. Others insist that cell cutting is simply a waste of time. If swarm cells are found when a brood chamber is lifted up it is well to go over the combs and look for supersedure queen cells. These usually appear on the sides of the combs.

If supersedure cells are found, the bees are telling us as plain as day that they want and need a new queen. They are d o v e t a i l i n g supersedure with swarming. It will do no good to destroy queen cells in such cases. Providing a young prolific queen is the only solution.

We often read in bee literature that a colony of medium strength is more apt to swarm than a strong colony. The reason for this is clear enough. The inferior queen can produce only a medium size colony at best. Of course, the bees will want to supersede such a queen and in most cases will dovetail swarming with supersedure.

The production of section comb honey is supposed to make swarming worse, but there is little real proof of this. In fact, it has been shown that where bees must build new comb it will tend to discourage swarming. Comb honey producers control swarming by killing the queen, destroying all queen cells until the bees have no young larvae to produce queen cells, and then given a ripe queen cell. The bees may then be confined to only one brood chamber and there will be no swarming. It is because of poor queens that swarming is started and not to any extent at least the type of storage space provided.

When the bees sulk, that is, refuse to go up into the supers, in comb honey production, but tend to store honey in the brood nest, it is proof of a poor queen. The bees make room for a good queen to lay and will clear the brood nest of honey if storage space is provided by adding any type of super.

We are often told too that a light honey flow will bring on swarming, while a heavy honey flow will stop it. A light honey flow stimulates brood rearing and a poor queen after a small spurt of heavy egg laying will snuff out and the bees build queen cells and swarm. A good queen keeps up egg laying, the bees are satisfied as long as there is ample comb space for egg laying and so do not swarm. Whenever the bees become discontented they will tend to swarm.

A wet spell of about a week when no nectar is coming in will sometimes cause the bees to build swarm cells. This can be prevented by keeping dry sugar on the inner cover until the main honey flow. The bees work the sugar, when shut in by a wet spell and so keep in good spirits. Again we say this will work only if the queen is good. Queens too are supposed to reach a peak of brood rearing and then taper off, often at the beginning of the main flow. This is a sign that the queen is becoming exhausted. A good queen keeps up her egg laying.

Some speak of queens being honey bound, that is, there is too much honey around the brood nest and the queen has no place to lay. As already mentioned bees will clear the brood nest for a good queen. If the bees are filling the brood chamber with honey the queen is failing and should be replaced. The Demaree plan of swarm control will work only if there is a good laying queen in the hive. A colony with a poor queen is certain to swarm in almost every case. If the queen is good the plan is unnecessary. Simply provide ample storage space at the beginning of the main flow. Beemen agree that success in beekeeping requires: (1) a good queen; (2) good combs in the brood nest; (3) ample stores at all times; (4) ample storage space during the flow.

We may need to requeen twice a year even here in the North to assure having a good queen at all times.

"The Australian Bee Journal"
Published by the Victorian Apiarists' Association at the beginning of each month.
Subscription 10/-per annum plus 2/6 postage to overseas countries.
Box 167, Rainbow, Victoria, Australia

STOVER'S SUMMER PRICES

It's not too late to boost those backward colonies up with a few two or three-pound packages, and we will have lots of good queens available after about June first.

Prices After May 20th, 1956

In lots of	Queens	ITALIANS 2-lb. & Q.	CAUCASIANS 3-lb. & Q.	4-lb. & Q.	5-lb. & Q.
1 -24	85c	$3.50	$4.25	$5.00	$5.75
25-99	75c	3.00	3.75	4.50	5.25
Large lots ..	70c	2.75	3.50	4.25	5.00

Tested Queens $2.00 each

Queens Postpaid — Airmailed — Clipped — No Extra Cost
For Queenless Package Deduct Price of Queen.
Packages F. O. B. Shipping Point

THE STOVER APIARIES

Mayhew, Miss.

MOUNTAIN GRAY CAUCASIANS
Personally raised. Gentle good workers; winter well. Queens $1.00 each.
ELBERT S. CHILDS
201 Garden Ave. Knoxville 18, Tenn.

HOW STORAGE AFFECTS HONEY

(Continued from page 352)

dation or in drawn combs free from granules or crystals of old honey, as well as yeasts. After the honey is well ripened and capped by the bees, it should be extracted promptly after removal from the hives and processed and stored in crystal-free equipment and containers.

After extraction, honey should be strained while cool, heated in a water bath with agitation to assure uniform and quick heating to 160°F. (lower for certain honeys) and held for 30 minutes, then strained through sugar-sack toweling, placed in containers while hot, and sealed with air-tight closures. All air bubbles and foam formation caused in these processes should be eliminated by proper apparatus. After placing in containers, processed honey should be cooled promptly and placed in storage in a dry atmosphere with a uniform temperature at any convenient and economical point below 70°F.

3- Banded
Italian Queens
Airmail — prepaid
any number
$ .90 each

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43 Years Continuous Service
Italian Package Bees
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Our Specialty
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Canada's
National Monthly Magazine
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YORK'S PACKAGE BEES AND QUEENS

The Preference of Leading Honey Producers

Your Choice of

DADANT'S Improved STARLINES or YORK'S Quality Bred ITALIANS

Fumidil B fed queen grafting yards, queen mating yards, and package bees at no extra cost.

PRICES WITH ITALIAN QUEENS

Quantity	1-24	25-99	100-up
2-lb. pkg.	$4.00	$3.75	$3.50
3-lb. pkg.	5.00	4.75	4.50
4-lb. pkg.	6.00	5.75	5.50
5-lb. pkg.	7.00	6.75	6.50
Queens	1.35	1.25	1.15

Reg. U.S. Pat. Off.

FOR DADANT'S IMPROVED STARLINES, add 25c each additional
FOR TESTED QUEENS, add $1.00 each additional
FOR QUEENLESS PACKAGES, deduct $1.00 each

FREE OFFER: On orders for Italian queens or packages of from 10 to 100, we will substitute 10% of the queens with Starlines at no additional charge if requested. Offer subject to availability.

Shipments are made FOB Jesup by express, parcel post, or your truck. Bees are certified bees from our own apiaries state registered and state inspected. If convenient small orders cash, and larger orders $1.00 deposit per package with balance payable two weeks prior to shipment.

YORK BEE COMPANY JESUP, GEORGIA
(The Universal Apiaries)
P. O. Box 300 412 W. Orange St. Phones: 3522, 3320

All Orders Going Out On Time

2-lb. packages with queens	$2.75	any number
3-lb. packages with queens	3.25	any number
Untested queens	.75	any number
Tested queens	1.50	any number
Larger packages, add	.75	per pound

Delivered prices on request. Above prices are F.O.B. except queens which are delivered by mail. Italians only. Remember our 100% Satisfaction always good. If you need more information, write us please.

MERRILL BEE COMPANY P.O. Box 115, State Line, Miss.

BETTER BRED QUEENS

Three-Banded Italians

Don't let those poor queens lose a crop. Replace them with our "Better Bred Queens" and make a profit.

Any quantity ..... 75c each

CALVERT APIARIES, Calvert, Alabama

PRODUCE COMB HONEY THE EASY WAY

(Continued from page 338)

single brood chamber hive. This means that such a colony is able to store more surplus than one in a single brood chamber, especially if the flow is long drawn out.

(4) The main advantage in using the double brood chamber hive in the production of section comb honey is that at the close of the season, after the surplus honey is removed, the colonies are ready to go into winter quarters so far as an adequate supply of stores is concerned.

Furthermore, the stores which should include pollen as well as honey, are likely to be properly placed. This results in more successful wintering. It seems safe to say that most of the winter losses in the North, also weak colonies in the spring, are due to an inadequate amount of stores. Colonies short of stores — honey and pollen, in the fall — simply cannot winter successfully and build up into normal colonies the following spring. Most of the winter losses are due to starvation.

Beekeepers who produce section comb honey as well as extracted honey know that comb honey colonies have more honey in the brood chambers late in the fall than colonies producing extracted honey. We are referring particularly to comb honey colonies in single brood chambers operated under the so-called orthodox method. It will then be obvious that the double brood chamber method for comb honey production should result in a superabundance of stores for winter and early spring requirements.

It seems to me that we should adopt a method involving the very minimum of expense and labor. I have tried to think of a definition for successful beekeeping and have arrived at the following: Successful beekeeping is producing maximum crops of honey at a minimum of expense.

Now I realize that there are a number of good methods of producing section comb honey and I am not saying that the method here described is the best. I do suggest, however, that those of you who are producing comb honey or who intend to produce it in the future, should try this method and equipment to see how it works.

HOLLOPETER'S QUEENS NOW READY

After latest spring on record, we can now give prompt service on queens from our HARDY, HUSTLING, HONEY GATHERING Italian stock.

Young Laying Queens

1-9	$1.00 each
10-24	.90 each
25-49	.80 each
50-99	.75 each
100-up	.70 each

WHITE PINE BEE FARMS
Box 810 Rockton, Pa.

DARK ITALIAN QUEENS

1 to 50 ..... $1.00 each
51 and up ..... .90 each

For queens that are as Good as the Best order from

WEAVER APIARIES
Navasota, Texas

BRIGHT THREE-BANDED ITALIAN QUEENS

Our Mott Strain is from early imported Italians. Their behavior is more according to pattern than most other races. They are usually gentle, hardy, good workers, and not inclined to swarm. Use our queens and you will be in line for all the honey crops, and have nice bees to work with.

PRICE — Balance of Season
1 to 50 $1.00 each 50 or more, 90c

TAYLOR APIARIES
Box 249 Luverne, Ala.

Italian Queens
EUGENE WALKER
Rt. 2, Box 207
Live Oak, California

XUM

Look for this Sign
When you Want
QUALITY AT LOW COST

Trade Mk. Reg.
U. S. Pat. Off.

KELLEY — "The Bee Man"

QUEENS

KELLEY ISLAND queens by the thousand are available now. If you are in a rush count on us for quick shipment by return air mail.

1-24 ..... 85c by prepaid air mail

25-99 ..... 75c by prepaid air mail

100-up ..... 70c by prepaid air mail

THE WALTER T. KELLEY CO. Clarkson, Ky.

THREE-BANDED ITALIAN BEES & QUEENS

Of two extra good strains. Good workers and very gentle.

Our Reg. Strain Untested Queens		Starline Queens	
1-25	$1.10	1-25	$1.30
25-100	1.05	25-100	1.20
100 up	1.00	100 up	1.00

PACKAGE BEES: 2-lb. with queen .....$3.50 3-lb. with queen $4.50

For package bees with Starline Queens, add 25c per package.

ALAMANCE BEE COMPANY GRAHAM, N. C. PHONE: 4703 or 7896

Index to Display Advertisers

Aeppler Co., C. W. 372
Anderson & Son, O. K. 374
American Bee Journal ...377
Australasian Beekeeper 323
Australian Bee Journal 380
Autauga Bee Farms 379
Berry & Son, M. C. 373
Bessonet Bee Co. 378
Blue Bonnet Apiaries 378
British Bee Journal 378
Brunson, H. C. 381
Burleson & Son, T. W. 326
Calvert Apiaries 382
Canadian Bee Journal 381
Cary Corp., M. R. 322
Childs, Elbert S. 381
Chrysler & Son, W. A. 322
Conneaut Can Co. 323
Dadant & Sons, Inc.
.....Inside Front Cover
Freund Can Co. 322
Flowers Bee Co. 373
Garon Bee Co. 374
Harper, Carlus T. 379
Hazel Atlas Glass Co.
.....Inside Back Cover
Honey Sales Co. 327
Homan, Farris 379
Hubbard Apiaries 323
Hutchison Mfg. Co. 323
Jackson Apiaries 378
Jensen's Apiaries 374
Jepson Co. H. H. 323
Jim's Valley Apiaries 323
Jones & Son, F. W. 327
Kelley Co., Walter T.
.....324-384
Leverette Apiaries,
Walter T. 372
Little's Apiaries 372
Lotz Co., August 327
Marshfield Mfg. Co. 326
Merrill Bee Co. 382
Miller's American
Honey Co. 326
Mitchell's Apiaries 378
Moore, Geo. W. 372
Morrill, Frank L. 326
Muth Co., Fred W. 322
New Zealand Beekeeper 376
Norman Bros. Apiaries 379
Norman, John A. 377
Plant, W. E. 373
Prairie View Honey Co. 322
Pringle, H. L. 325
Reams, W. D. 378
Root Co., The A. I.
.....Back cover, 328
Rossman Apiaries 377
Schmidt Apiaries 322
Sioux Honey Asso. 375
Smith Co., L. R. 324
Stoller Honey Farms 326
Stover Apiaries 381
Stricker Apiaries 374
Superior Honey Co. 325
Taylor Apiaries 383
Taylor, Stewart 326
Walker, Eugene 383
Weaver Apiaries 383
Weaver, Howard 379
White Pine Bee Farms ...383
Wilbanks Apiaries 374
Williams Apiaries, Dr. 372
Williams Bros. Mfg. Co. 323
Wing & Sons, J. E. 381
Woodman Co., A. G. 327
Yates, A. W. 327
York Bee Co. 382